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 NEWS  1          Web Page URLs for STN Seminar Schedule - N. America
 NEWS  2  Sep 17  IMSworld Pharmaceutical Company Directory name change
                  to PHARMASEARCH
 NEWS  3  Oct 09  Korean abstracts now included in Derwent World Patents
                  Index
 NEWS  4  Oct 09  Number of Derwent World Patents Index updates increased
 NEWS  5  Oct 15  Calculated properties now in the REGISTRY/ZREGISTRY File
 NEWS  6  Oct 22  Over 1 million reactions added to CASREACT
 NEWS  7  Oct 22  DGENE GETSIM has been improved
 NEWS  8  Oct 29  AAASD no longer available
 NEWS  9  Nov 19  New Search Capabilities  USPATFULL and USPAT2
 NEWS 10  Nov 19  TOXCENTER(SM) - new toxicology file now available on STN
 NEWS 11  Nov 29  COPPERLIT now available on STN
 NEWS 12  Nov 29  DWPI revisions to NTIS and US Provisional Numbers
 NEWS 13  Nov 30  Files VETU and VETB to have open access
 NEWS 14  Dec 10  WPINDEX/WPIDS/WPIX New and Revised Manual Codes for 2002
 NEWS 15  Dec 10  DGENE BLAST Homology Search
 NEWS 16  Dec 17  WELDASEARCH now available on STN
 NEWS 17  Dec 17  STANDARDS now available on STN
 NEWS 18  Dec 17  New fields for DPCI
 NEWS 19  Dec 19  CAS Roles modified
 NEWS 20  Dec 19  1907-1946 data and page images added to CA and CAplus
 NEWS 21  Jan 25  BLAST(R) searching in REGISTRY available in STN on the Web
 NEWS 22  Jan 25  Searching with the P indicator for Preparations
 NEWS 23  Jan 29  FSTA has been reloaded and moves to weekly updates
 NEWS 24  Feb 01  DKILIT now produced by FIZ Karlsruhe and has a new update
                  frequency
 NEWS 25  Feb 19  Access via Tymnet and SprintNet Eliminated Effective 3/31/02
 NEWS 26  Mar 08  Gene Names now available in BIOSIS
 NEWS 27  Mar 22  TOXLIT no longer available
 NEWS 28  Mar 22  TRCTHERMO no longer available

 NEWS EXPRESS  February 1 CURRENT WINDOWS VERSION IS V6.0d,
               CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP),
               AND CURRENT DISCOVER FILE IS DATED 05 FEBRUARY 2002
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=> s cheese#
L1       45623 CHEESE#

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L2        4649 TRYPSIN

=> s transglutaminase#
L3         770 TRANSGLUTAMINASE#

=> s l1 and l2 and l3
L4           0 L1 AND L2 AND L3

=> s l1 and l2
L5         123 L1 AND L2

=> s l1/ti
L6       23751 L1/TI

=> s l6 and l2
L7          62 L6 AND L2

=> d 1-62 all

L7   ANSWER 1 OF 62  FSTA  COPYRIGHT 2002 IFIS
AN   2002:P0050   FSTA
TI   Controlled hydrolysis of cheese whey proteins using
     trypsin and .alpha.-chymotrypsin.
AU   Galvao, C. M. A.; Souza Silva, A. F.; Custodio, M. F.; Monti, R.;
     Giordano, R. de L. C.
CS   Correspondence (Reprint) address, R. de L. C. Giordano, Dep. de Eng.
     Quimica, Univ. Fed. de Sao Carlos, CP 676, CEP 13565-905, Sao Carlos, SP,
     Brazil.  E-mail raquel(a)deq.ufscar.br
SO   Applied Biochemistry and Biotechnology, (2001), 91-93, 761-776, 18 ref.
     ISSN: 0273-2289
DT   Journal
LA   English
AB   Production of protein hydrolysates with controlled composition from cheese
     whey proteins was examined.  Cheese whey was characterized and several
     hydrolysis experiments were carried out using whey proteins and purified
     .beta.-lactoglobulin, as substrates, and trypsin and
     .alpha.-chymotrypsin, (EC 3.4.21.4 and EC 3.4.21.1, respectively) as
     catalysts, at 40 or 55.degree.C and several enzyme concn.  Max. degrees of
     hydrolysis obtained experimentally were compared with the theoretical
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values, and peptide compositions were determined. For **trypsin**, a 100% yield was achieved whereas for .alpha.-chymotrypsin, hydrolysis seemed to be dependent on the oligopeptide size. Results showed that the 2 proteinases could hydrolyse .beta.-lactoglobulin. **Trypsin** and .alpha.-chymotrypsin were stable at 40.degree.C, but a sharp decrease in proteinase activity was observed at 55.degree.C.

CC P (Milk and Dairy Products)

CT LACTOGLOBULINS; PROTEINASES; PROTEINS; PROTEINS MILK; WHEY; Nb -LACTOGLOBULIN; CHYMOTRYPSIN; HYDROLYSIS; PROTEIN HYDROLYSATES; **TRYPSIN**; WHEY PROTEINS

L7 ANSWER 2 OF 62 FSTA COPYRIGHT 2002 IFIS

AN 2001(01):P0117 FSTA

TI Structural analysis of new antihypertensive peptides derived from **cheese** whey protein by proteinase K digestion.

AU Abubakar, A.; Saito, T.; Kitazawa, H.; Kawai, Y.; Itoh, T.

CS Lab. of Animal Products Chem., Graduate Sch. of Agric. Sci., Tohoku Univ., Tsutsumidori-Amamiyamachi 1-1, Aoba-ku, Sendai 981-8555, Japan

SO Journal of Dairy Science, (1998), 81 (12) 3131-3138, 20 ref.
ISSN: 0022-0302

DT Journal

LA English

AB Whey protein was digested with 1 of 7 proteinases at 37.degree.C (**trypsin**, proteinase K, actinase E, thermolysin or papain) or 25.degree.C (pepsin or chymotrypsin) for 24 h. The digests were assayed for inhibitory activity against angiotensin-converting enzyme (peptidyl-dipeptidase A) and for effects on systolic blood pressure in spontaneously hypertensive rats after gastric intubation. The strongest depressive effect on systolic blood pressure (-55 mmHg) was observed at 6 h after gastric intubation of whey protein digested with proteinase K. 6 peptides were chromatographically isolated from proteinase K digest by hydrophobic RP-HPLC and gel filtration. Amino acid sequences and their origins were as follows: Val-Tyr-Pro-Phe-Pro-Gly [.beta.-casein (CN); f 59-64]; Gly-Lys-Pro (.beta..sub.2-microglobulin; f 18-20); Ile-Pro-Ala (.beta.-lactoglobulin; f 78-80); Phe-Pro (serum albumin; f 221-222; .beta.-CN, f 62-63, f 157-158, and f 205-206); Val-Tyr-Pro (.beta.-CN; f 59-61); and Thr-Pro-Val-Val-Val-Pro-Pro-Phe-Leu-Gln-Pro (.beta.-CN; f 80-90). Chemical synthesis of the 6 peptides confirmed that all peptides, except an undecapeptide, have antihypertensive activity in spontaneously hypertensive rats. The synthetic tripeptide Ile-Pro-Ala showed the strongest antihypertensive activity (-31 mmHg).

CC P (Milk and Dairy Products)

CT HEALTH; PEPTIDES; WHEY; ANTIHYPERTENSIVE ACTIVITY

L7 ANSWER 3 OF 62 FSTA COPYRIGHT 2002 IFIS

AN 2000(07):P1070 FSTA

TI Bacteriocinogenic activity of lactobacilli isolated from **cheese** and baby faeces.

AU Bogovic Matijasic, B.; Rogelj, I.

CS Zootech. Dep., Biotech. Fac., Inst. for Dairying, Univ. of Ljubljana, Groblje 3, Slovenia. Tel. ++386 61 717-903

SO Food Technology and Biotechnology, (1999), 37 (2) 93-100, 26 ref.
ISSN: 1330-9862

DT Journal

LA English

SL Serbo-Croatian

AB Lactobacilli have anti-pathogen and -spoilage activities, and are likely candidates for probiotic use. Lactobacillus strains, isolated from cheese (30 strains) and baby faeces (41 strains), were examined for bacteriocin production, using the deferred agar spot (DAS) test, the agar well diffusion (AWD) assay, and 29 Gram-positive test strains from different genera. 8 cheese isolates and 2 human isolates showed antimicrobial

activity against .gtoreq.1 test strains. The proteinaceous nature of the inhibitor was confirmed in 4 cheese isolates and in both human isolates (LF221 and K7). Human isolates also inhibited some non-lactic acid bacteria. L. acidophilus LF221 was additionally tested by AWD assay against a wide range of bacteria, including pathogens. Besides lactic acid bacteria test strains, strains of the following species were also inhibited: Listeria innocua, Enterococcus faecalis, Bacillus cereus, Staphylococcus aureus and Clostridium sp. The inhibitor was a heat stable protein, inactivated by **trypsin**, proteinase K and pronase, and resistant to heat (100.degree.C). Lactobacillus acidophilus LF221 was bactericidal, but not bacteriolytic to Lactobacillus helveticus ATCC 11509. Bacteriocin molecules were present in the supernatant in the form of aggregates with M.sub.r >150 kDa.

CC P (Milk and Dairy Products)
CT BACTERIOCINS; CHEESE; LACTOBACILLUS

L7 ANSWER 4 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1998(09):P1496 FSTA
TI Inhibitory activity against plasmin, **trypsin**, and elastase in rennet whey and in **cheese** fortified with whey protein.
AU Benfeldt, C.; Sorensen, J.; Petersen, T. E.
CS MD Foods Res. & Dev. Cent., Rordrumvej 2, DK-8220 Brabrand, Denmark
SO Journal of Dairy Science, (1998), 81 (3) 615-620, 24 ref.
ISSN: 0022-0302
DT Journal
LA English
AB The inhibitory activity against **trypsin**, elastase and plasmin was determined in samples of Danbo 45+ [cheese] that were manufactured from milk pasteurized at 72, 80 or 90.degree.C for 15, 30 and 60 s, the corresponding rennet wheys, and Havarti 45+ [cheese] manufactured from milk concentrated 1.8, 2.7 or 4.6x by ultrafiltration. A sensitive colorimetric assay demonstrated that the incorporation of thermally denatured whey proteins into the cheese curd by pasteurization resulted in a decreased proteinase inhibitory activity against **trypsin** and elastase in Danbo 45+ and against **trypsin**, elastase and plasmin in the corresponding rennet wheys. However, incorporation of native whey proteins into Havarti 45+ by ultrafiltration of the cheese milk resulted in an increased inhibitory activity against **trypsin** and elastase in the cheeses. Cheese manufactured from milk concentrated 1.8, 2.7 or 4.6x displayed **trypsin** inhibitory activity that was 1.8-, 2.9- and 5.1x, respectively, that of the reference cheese. Similarly, the elastase inhibitory activity in the cheeses increased 2.2-, 3.2- and 7.8x. It is concluded that the increased inhibitory activity in cheese fortified with native whey protein likely contributes to the decreased proteolysis and altered ripening characteristics of the resulting cheeses and, further, the method can be adapted to detect other inhibitors if sufficiently sensitive substrates are available.
CC P (Milk and Dairy Products)
CT CHEESE VARIETIES; ENZYME INHIBITORS; MILK; PASTEURIZATION; ULTRAFILTRATION; WHEY; CHEESE MILK; CHEESE WHEY; PROTEINASES INHIBITORS

L7 ANSWER 5 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1998(05):P0907 FSTA
TI Development of a new type of fermented **cheese** whey beverage with inhibitory effects against angiotensin-converting enzyme.
AU Saito, T.; Abubakar, A.; Itoh, T.; Arai, I.; Aimar, M. V.
CS Lab. of Animal Products Chem., Graduate Sch. of Agric., Tohoku Univ., Aoba-ku, Sendai 981, Japan
SO Tohoku Journal of Agricultural Research, (1997), 48 (1/2) 15-23, 19 ref.
ISSN: 0040-8719
DT Journal
LA English

AB [Angiotensin I-converting enzyme (ACE, peptidyl-dipeptidase A; EC 3.4.15.1) has an important role in the control of blood pressure. The antihypertensive properties of foods with ACE inhibitory activity may make them useful as functional foods. In this study, a new type of cultured cheese whey beverage with ACE inhibitory activity was developed.] Cheese whey was digested with 7 kinds of proteases for 24 h at 37.degree.C (**trypsin**, proteinase-K, actinase-E, thermolysin and papain) or 25.degree.C (pepsin and chymotrypsin). Strong inhibitory activity of >95% against ACE of rabbit lung was generated by proteinase-K and thermolysin digestion. The digested cheese whey was then fermented at 37.degree.C for 24 h with 2% (v/v) inoculum of 2 kinds of lactic acid bacterial culture (1% each of Lactobacillus delbrueckii spp. bulgaricus and Streptococcus thermophilus). Through the comparison of the ACE inhibitory activity before and after lactic acid fermentation, proteinase-K was selected as the most suitable enzyme among the 7 proteases tested, because it showed almost no decrease in activity after fermentation (from 89.9 to 89.8%). Based on the results of the preliminary experiments, a new type of fermented cheese whey beverage containing ACE activity was prepared. The IC.sub.5.sub.0 value in the fermented cheese whey beverage was 50 ng/ml.
CC P (Milk and Dairy Products)
CT BEVERAGES; FERMENTED DAIRY PRODUCTS; PROTEINASES; WHEY; PEPTIDYL-DIPEPTIDASE A; WHEY BEVERAGES

L7 ANSWER 6 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1997(07):P0110 FSTA
TI New derivation of the inhibitory activity against angiotensin converting enzyme (ACE) from sweet **cheese** whey.
AU Abubakar, A.; Saito, T.; Aimar, M. V.; Itoh, T.
CS Lab. of Animal Products Chem., Dep. of Applied Bio-Sci., Fac. of Agric., Tohoku Univ., Sendai 981, Japan
SO Tohoku Journal of Agricultural Research, (1996), 47 (1/2) 1-8, 19 ref. ISSN: 0040-8719
DT Journal
LA English
AB Three kinds of samples [whey protein (WP) containing caseinoglycopeptide (CGP+), WP-removed CGP (CGP-), and cheese whey powder (CWP)] were digested with 7 kinds of proteases at 37.degree.C for 24 hr (**trypsin**, proteinase-K, actinase-E, thermolysin and papain) or 25.degree.C (pepsin and chymotrypsin). Strong inhibitory activity against the angiotensin-converting enzyme (ACE, EC. 3.4.15.1) was generated in all samples by 5 proteases digestion (pepsin, chymotrypsin, proteinase-K, thermolysin and papain). In WP (CGP+), the most potent inhibitors (91.91%) were derived by papain digestion, and in WP (CGP-), digestion by thermolysin induced the highest activity (95.23%). In CWP, the highest activity was derived by thermolysin (98.56%). On the other hand, weak ACE inhibitory activity was derived by **trypsin** and actinase-E digestion. As no remarkable differences in inhibitory activity were observed between WP (CGP+) and WP (CGP-) samples, the bioactive peptides are considered to come mainly not from CGP but from WP components, such as .beta.-lactoglobulin, .alpha.-lactalbumin, serum albumin and/or immunoglobulins. A similar development pattern in the activity between WP (CGP+) and CWP suggested that lactose and minerals do not contribute to the activity in CWP.
CC P (Milk and Dairy Products)
CT DAIRY PRODUCTS; ENZYMES; PROTEINASES; PROTEOLYSIS; WHEY; PEPTIDYL-DIPEPTIDASE A

L7 ANSWER 7 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1997(06):P0142 FSTA
TI Characteristics of lactococcal strains isolated from mixed **cheese** starters by CVT agar.
AU Masuda, T.; Takashita, T.; Suzuki, K.; Yamakawa, T.; Morichi, T.

CS Coll. of Bioresource Sci., Nihon Univ., Fujisawa-shi 252, Japan
SO Animal Science and Technology, (1996), 67 (7) 612-620, 17 ref.
ISSN: 0021-5309
DT Journal
LA English
SL Japanese
AB We isolated lactococcal strains that proliferated on agar medium containing 1 ppm crystal violet (CVT agar) from commercial mixed cheese starters. These isolates (CTV strains) grew as pairs or short chains under normal culture conditions, but they formed extremely long chains and precipitated as an aggregated mass in tryptone-yeast extract-glucose broth containing 30mM Na citrate. Most of the CVT strains produced a large quantity of acetoin from citric acid in the presence of fermentable sugar. Some of the CVT strains exhibited a relatively high **trypsin**-like activity. These CVT strains, which were uniformly resistant to 1 ppm crystal violet and formed the unique aggregate in the broth containing 30mM citrate, were confirmed to exist in several commercial mixed cheese starters, although their numbers were very low. The CVT strains were identified as Lactococcus lactis. However, all the known 26 strains of Lactococcus lactis subsp. lactis, L. lactis subsp. diacetylactis and L. lactis subsp. cremoris could not grow on CVT agar and did not show the above peculiar growth behaviour in the presence of citrate. Although the taxonomical characteristics of the present strains isolated by CVT agar differed slightly depending on their origins, there were at the least two types. One of them seemed to belong to L. lactis subsp. cremoris, and the other strains were considered to belong rather to L. lactis subsp. diacetylactis which was characterized by active citrate fermentation ability, although they possessed some characteristics of L. lactis subsp. cremoris. Analysis of the cellular fatty acid composition supported the above taxonomical consideration of the CVT strains.
CC P (Milk and Dairy Products)
CT BACTERIA; LACTOCOCCUS; STARTERS; CHEESE STARTERS

L7 ANSWER 8 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1996(11):P0145 FSTA
TI Effect of process parameters on structure-function relations of Cheddar **cheese**.
AU Muthukumarappan, K.; Bogenrief, D. D.; Gunasekaran, S.; Olson, N. F.
CS United States of America, Institute of Food Technologists 1996 Annual Meeting; Dep. of Agric. Eng., Univ. of Wisconsin, Madison, WI 53706, USA
SO (1996), 1996 IFT annual meeting: book of abstracts, p. 9 ISSN 1082-1236
ISSN: 1082-1236
DT Conference
LA English
AB Cheddar cheeses were made with various levels of fat, moisture, curd pH at draining of whey, chymosin and **trypsin**, and with 2 curd handling methods (stirred vs. milled). Cheese microstructure was evaluated and distribution and geometry of fat globules in cheeses were quantified. Rheological properties and functional properties were also assessed. Microstructural attributes were related to rheological and functional characteristics. Effect of ripening (up to 6 months) was also studied, via proteolysis determinations using gel electrophoresis. Fat globule size, shape and various other functional properties varied significantly with fat level. [From En summ. Further abstracts of papers/posters presented at this meeting are covered in electronic formats of the FSTA database and may be traced via the corporate authors (CA) field, under United States of America, Institute of Food Technologists [1996 Annual Meeting]. See also FSTA (1996) 28 11A2.]
CC P (Milk and Dairy Products)
CT CHEESE VARIETIES; CHEESEMAKING; DAIRY PRODUCTS; FUNCTIONAL PROPERTIES; PHYSICAL PROPERTIES; PROCESSING; RHEOLOGICAL PROPERTIES; CHEDDAR CHEESE; MICROSTRUCTURE

L7 ANSWER 9 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1996(05):P0183 FSTA
TI Debittering of **cheese** peptides by recombinant aminopeptidase of Lactobacillus casei species.
AU Lee, B. H.; Robert, N.; Park, S. Y.; Arora, G.
CS United States of America, American Dairy Science Association Joint Meeting 1995; United States of America, Northeast ADSA/ASAS Joint Meeting 1995; Dep. of Food Sci., McGill Univ., Montreal, Que. H9X 3V9, Canada
SO Journal of Dairy Science, (1995), 78 (Suppl. 1) 120
ISSN: 0022-0302
DT Conference
LA English
AB To accelerate ripening of Cheddar cheese without bitterness, aminopeptidase of Lactobacillus casei was overproduced by recombinant DNA technology. The genomic library was screened, proline rich caseins were digested with **trypsin** and oligopeptides produced were isolated and identified. Both aminopeptidase and proline-specific peptidases were responsible for hydrolysing bitter peptides of caseins. [From En summ. Further abstracts from this Meeting may be traced via the corporate authors (CA) field, under United States of America, American Dairy Science Association [Joint Meeting 1995] and United States of America, Northeast ADSA/ASAS [Joint Meeting 1995]. See also FSTA (1996) 28 4P27.]
CC P (Milk and Dairy Products)
CT BITTER COMPOUNDS; CASEIN; ENZYMES; PEPTIDES; PROTEINASES; PROTEINS; AMINOPEPTIDASES; BITTER PEPTIDES

L7 ANSWER 10 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1996(03):P0111 FSTA
TI Gel electrophoresis and immunoblotting for the detection of casein proteolysis in **cheese**.
AU Addeo, F.; Garro, G.; Intorcia, N.; Pellegrino, L.; Resmini, P.; Chianese, L.
CS Istituto Sperimentale Lattiero-Caseario, Via A. Lombardo 11, 20075 Lodi, Italy
SO Journal of Dairy Research, (1995), 62 (2) 297-309, 24 ref.
ISSN: 0022-0299
DT Journal
LA English
AB Whole N fractions of 6 samples of hard and semi hard pressed cheeses were analysed using PAGE, polyacrylamide gel isoelectric focusing and immunoblotting with polyclonal antibodies against .beta.- and .alpha..sub.s.sub.1-casein. [Cheeses included: Appenzell; Beaufort; Comte; Fontina; Mahon; and Parmigiano-Reggiano.] The origin of some electrophoretic bands corresponding to peptides produced from enzymic degradation of casein fractions was established. A number of these peptides were also present in in vitro plasmin and chymosin hydrolysates of casein. Thus, it was also possible to determine which casein was the source of each peptide and which enzymes were active in cheese. Compared with traditional Coomassie staining procedures, immunoblotting was more sensitive and specific, making interpretation for each electrophoretic profile easy. Thus, it was also possible to obtain a clear picture of the state of each casein fraction in cheese varieties. 2 main peptides were isolated from the pH 4.6-insoluble N fraction of Parmigiano-Reggiano cheese using DEAE-cellulose chromatography and identified, from the amino acid sequences of N- and C-terminal ends, as .gamma..sub.3-casein (.beta.-casein(f108-209)) and .alpha..sub.s.sub.1-PL1 (.alpha..sub.s.sub.1-casein(f80-199)). In both cases, a Lys-X bond was hydrolysed, indicating the action of a **trypsin** like enzyme in .beta.- and .alpha..sub.s.sub.1-casein hydrolysis during ripening of this cheese variety.
CC P (Milk and Dairy Products)

CT CASEIN; CHEESE; DAIRY PRODUCTS; PROTEINS; PROTEOLYSIS

L7 ANSWER 11 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1996(02):P0007 FSTA
TI Rapid enzymatic method for biotyping and control of lactic acid bacteria used in the production of yoghurt and some **cheeses**.
AU Bianchi-Salvadori, B.; Camaschella, P.; Cislaghi, S.
CS Cent. Sperimentale del Latte, Strada per Merlino 3, 20060 Zelo Buon Persico, MI, Italy. Tel. 02/906961. Fax 02/9069699
SO International Journal of Food Microbiology, (1995), 27 (2/3) 253-261, 28 ref.
ISSN: 0168-1605
DT Journal
LA English
AB Enzymic patterns of 30 strains of Streptococcus thermophilus and 18 strains of Lactobacillus delbrueckii subsp. bulgaricus were determined using a rapid APIZYM method [using API 20 and LRA ZYM Kits]. Alkaline and acid phosphatase, naphthol-AS-BI-phosphohydrolase, 10 esterases, 20 glycosidases, 61 peptidases and 2 proteinases (**trypsin** and chymotrypsin) were included. The strains investigated were isolated from yoghurt and from different starters used in Italian cheesemaking. For S. thermophilus, all strains were positive for 3 glycosidases, 4 monopeptidases, 9 dipeptidases and 1 tripeptidase and all were negative for 2 esterases, 9 glycosidases, 8 peptidases and **trypsin**. For L. delbrueckii subsp. bulgaricus, all strains were positive for 2 esterases, 2 glycosidases, 11 monopeptidases, 9 dipeptidases, 2 tripeptidases and 1 tetrapeptidase and all were negative for alkaline-phosphatase, 3 esterases, 7 glycosidases, 5 monopeptidases and 2 dipeptidases. Results showed that the defined enyzmic patterns of starter cultures can be used to predict their suitability for dairy fermentations and for monitoring their stability, as well as for typing.
CC P (Milk and Dairy Products)
CT BACTERIA; ENZYMES; LACTOBACILLUS; STREPTOCOCCUS

L7 ANSWER 12 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1995(09):P0077 FSTA
TI Behavior of Listeria monocytogenes in Mozzarella **cheese** in presence of Lactococcus lactis.
AU Stecchini, M. L.; Aquili, V.; Sarais, I.
CS Dipartimento di Sci. degli Alimenti, Univ. degli Studi di Udine, 33100 Udine, Italy
SO International Journal of Food Microbiology, (1995), 25 (3) 301-310, 29 ref.
ISSN: 0168-1605
DT Journal
LA English
AB The behaviour of Listeria monocytogenes (Scott A) on fully processed Italian Mozzarella cheese was examined in the presence and absence of bacteriocins produced by Lactococcus lactis subsp. lactis strains DIP 15 and DIP 16. These strains, isolated from raw milk, produced heat stable bacteriocins that were inactivated by pronase, .alpha.-chymotrypsin and proteinase K, but not by pepsin, **trypsin** and catalase. Addition of crude bacteriocins to the growing culture of L. monocytogenes resulted in a significant reduction in cell number at 5.degree.C, but not at 30.degree.C. Mozzarella cheese was inoculated with the L. monocytogenes culture to obtain an initial level of approx. 30 cfu/cm.sup.2 surface of Mozzarella and approx. 10.sup.3 cfu/ml of the surrounding fluid and then packaged in bags containing heat-treated neutralized-cultures of L. lactis subsp. lactis in skim milk (in Italy, Mozzarella is sold in small pieces individually packaged in bags containing some fluid). Bags were stored at 5.degree.C for up to 21 days. The presence of bacteriocins resulted in apparent death of L. monocytogenes after 24 h storage. After 7 days

storage, a revival of L. monocytogenes was observed, followed by an increase in number. However, for a storage period of 2-3 wk, the number of L. monocytogenes remained significantly below the number observed for Mozzarella cheese packaged in the absence of heat-treated cultures of Lactococcus lactis.
CC P (Milk and Dairy Products)
CT ANTIBIOTICS; BACTERIA; BACTERIOCINS; CHEESE VARIETIES; DAIRY PRODUCTS; DRUGS; FOOD SAFETY; LACTOCOCCUS; LISTERIA; MOZZARELLA CHEESE

L7 ANSWER 13 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1994(06):P0088 FSTA
TI Isolation and identification of **cheese**-smear bacteria inhibitory to Listeria spp.
AU Ryser, E. T.; Maisnier-Patin, S.; Gratadoux, J. J.; Richard, J.
CS Correspondence (Reprint) address, J. Richard, INRA, Sta. de Recherches Laitieres, 78350 Jouy-en-Josas, France
SO International Journal of Food Microbiology, (1994), 21 (3) 237-246, 21 ref.
ISSN: 0168-1605
DT Journal
LA English
AB Using a newly developed hydrophobic grid membrane method, 105 traditional French cheeses (including Brie, Camembert, Cantal, Comte, Epoisee, Langnes, Livarot, Maroilles, Monbiar, Munster, Pont l'Eveque, Raclette, Reblochon, St. Nutaire, St. Paulin, Tomme de Savoie and several proprietary cheeses) were screened for surface smear microorganisms inhibitory to Listeria monocytogenes strain V7 (milk isolate). Approx. 125 000 colonies were examined; <0.1% produced visible inhibition zones. Isolates possessing antilisterial activity consisted of strains of Enterococcus faecalis, Staphylococcus xylosus, S. warneri and coryneform bacteria, including 1 orange coryneform resembling Brevibacterium linens. All strains of E. faecalis and the orange coryneform that inhibited L. monocytogenes V7 exhibited strong inhibition against a panel of 21 Listeria strains comprising L. monocytogenes (14 strains), L. innocua (2 strains), L. ivanovii (2 strains), L. seeligeri (2 strains) and L. welshimeri (1 strain). The remaining cheese isolates showed moderate to weak inhibition towards this set of Listeria strains. Inhibitory substances produced by all strains except the orange coryneform were sensitive to .gtoreq.1 of 5 proteolytic enzymes (proteinase K [type XI], pronase E [type XIV], **trypsin** [type I], .alpha.-chymotrypsin [type II] and Ficin) tested and were classified as bacteriocin-like inhibitory agents.
CC P (Milk and Dairy Products)
CT BACTERIA; FOOD SAFETY; INHIBITION; LISTERIA; MICROORGANISMS

L7 ANSWER 14 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1994(02):P0129 FSTA
TI Acid and semi-alkaline proteinase in Swiss-type **cheese**.
AU Igoshi, K.; Arima, S.
CS Fac. of Agric., Kyushu Tokai Univ., Aso-gun Kumamoto-ken, Japan
SO Milchwissenschaft, (1993), 48 (11) 623-626, 10 ref.
ISSN: 0026-3788
DT Journal
LA English
SL German
AB Proteinases were isolated from Gruyere and Emmental cheeses and their properties were investigated using CM-Sephadex chromatography and PAGE. 2 proteinase fractions were eluted, at 0.6 and 0.9-1.0M NaCl, from Emmental (Em-1 and Em-2) and Gruyere (Gr-1 and Gr-2) extracts. Em-1 and Gr-1 showed highest activity at pH 3.8-4.0; Em-2 and Gr-2 had optimum pH at approx. 8.0. Em-1 and Gr-1 were strongly inhibited by pepstatin, but not affected by other agents. Em-2 and Gr-2 were inhibited by soybean **trypsin**

inhibitor, o-phenanthroline and sulphydryl blocking agents. Products with similar mobilities to .alpha..sub.s.sub.1-I casein and .beta.-I casein appeared when Em-1 and Gr-1 acted on casein. Em-2 and Gr-2 produced fragments with mobilities similar to .gamma.-casein. Properties of Em-1 and Gr-1, and of Em-2 and Gr-2 were almost identical, suggesting that these are the same enzymes. It was also concluded that Em/Gr-1 and Em/Gr-2 correspond to the acid and alkaline proteinases in milk, respectively.
CC P (Milk and Dairy Products)
CT CHEESE VARIETIES; DAIRY PRODUCTS; ENZYMES; PROTEINASES; SWISS CHEESE

L7 ANSWER 15 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1993(01):P0079 FSTA
TI Textural properties of **cheese** analogs containing proteolytic enzyme-modified soy protein isolates.
AU Kim (Lee), S. Y.; Park, P. S. W.; Rhee, K. C.
CS Correspondence (Reprint) address, P. S. W. Park, Food Protein R&D Cent., Texas A&M Univ., College Station, TX 77843-2476, USA
SO Journal of the American Oil Chemists' Society, (1992), 69 (8) 755-759, 22 ref.
ISSN: 0003-021X
DT Journal
LA English
AB Cheese analogues were prepared from untreated or proteolytically modified soy protein isolates (SPI), replacing 60% of casein, to explore their potential to replace higher-priced milk proteins. Quality attributes of cheese analogues were evaluated by texture profile analysis with the Instron and melting spread. Compared with commercial milk-based cheeses, ranging from hard-type (Cheddar) to soft-type products (Mozzarella), textural properties of cheese analogues were markedly different; they were harder and more fracturable with no measurable adhesiveness. Use of enzyme-modified SPI significantly ($P < 0.05$) decreased both hardness and fracturability of cheese analogues and brought about adhesiveness, all of which fell within the range observed for dairy cheeses. Although melting spread of cheese analogues was improved by use of enzyme-modified SPI, it was still inferior to those of dairy cheeses and needed further improvement. Treatments of SPI with alcalase and **trypsin** modified textural properties of the resulting cheese analogues more than those with other proteinases (.alpha.-chymotrypsin, liquozyme and rennet) studied.
CC P (Milk and Dairy Products)
CT PROCESSED FOODS; SIMULATED FOODS; SOY PRODUCTS; SOY PROTEINS; CHEESE SUBSTITUTES

L7 ANSWER 16 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1992(09):P0066 FSTA
TI Milk plasmin activity influence on Cheddar **cheese** quality during ripening.
AU Farkye, N. Y.; Landkammer, C. F.
CS Dairy Products Tech. Cent., California Polytechnic State Univ., San Luis Obispo, CA 93407, USA
SO Journal of Food Science, (1992), 57 (3) 622-624, 639, 27 ref.
ISSN: 0022-1147
DT Journal
LA English
AB [Plasmin is a **trypsin**-like serine proteinase which naturally occurs in bovine milk. It is relatively heat-stable, survives pasteurization of milk and is active in a variety of cheeses.] Up to 6x increase in plasmin activity in milk did not significantly ($P < 0.05$) affect the composition (moisture, protein, NaCl) of cheese, although a slight increase in moisture and decrease in protein content of cheese was noted. Proteolysis in cheese increased with plasmin activity, resulting in improved flavour and overall quality of cheese after 3 and 6 months

ripening. Consistently, increasing plasmin activity in milk approx. 3x resulted in cheese of superior sensory quality.
CC P (Milk and Dairy Products)
CT CHEESE VARIETIES; DAIRY PRODUCTS; ENZYMES; PROTEINASES; CHEDDAR CHEESE; CHEESES SPECIFIC; PLASMIN

L7 ANSWER 17 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1990(10):P0099 FSTA
TI Decomposition of milk proteins during the ripening of **cheese**. II. Enzymatic hydrolysis of .beta.-casein.
AU Pahkala, E.; Pihlanto-Leppala, A.; Laukkanen, M.; Antila, V.
CS Agric. Res. Cent., Food Res. Inst., 31600 Jokioinen, Finland
SO Meijeritieteellinen Aikakauskirja, (1989), 47 (1) 63-70, 15 ref.
DT Journal
LA English
SL Finnish
AB .beta.-Casein was hydrolysed using chymosin, plasmin, **trypsin**, and enzymes isolated from 3 Lactobacillus helveticus and 9 L. casei strains. Peptides released by chymosin came from the C-terminal end of .beta.-casein, starting at residue 158. Peptides released by plasmin were from the N-terminal end or the mid-section of the chain. **Trypsin** fragmented .beta.-casein all along the chain at the Arg-X and Lys-X bonds. Proteolytic effect of lactobacilli enzymes was less than that of the other enzymes studied. L. helveticus strains released more peptides than did L. casei, which usually affected only .beta.-casein bond 28-29. [See preceding abstr. for part I.]
CC P (Milk and Dairy Products)
CT CASEIN; ENZYMES; PROTEINS; Nb -CASEIN; HYDROLYSIS

L7 ANSWER 18 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1990(10):P0098 FSTA
TI Decomposition of milk proteins during the ripening of **cheese**. I. Enzymatic hydrolysis of .alpha..sub.s-casein.
AU Pahkala, E.; Pihlanto-Leppala, A.; Laukkanen, M.; Antila, V.
CS Agric. Res. Cent., Food Res. Inst., 31600 Jokioinen, Finland
SO Meijeritieteellinen Aikakauskirja, (1989), 47 (1) 39-47, 10 ref.
DT Journal
LA English
SL Finnish
AB Effects of chymosin, **trypsin**, plasmin, 3 Lactobacillus helveticus strains and 9 L. casei strains on .alpha..sub.s-casein were examined by isolating and identifying peptides resulting from hydrolysis. Peptides released by the action of chymosin on .alpha..sub.s.sub.1-casein came from the N-terminal end (1-23), the middle range (99-149) and the C-terminal end (150-199), and smaller fractions thereof, the largest of which were 1-23, 157-164 and 165-199. **Trypsin** hydrolysed .alpha..sub.s.sub.1-casein throughout the length of the chain, and affected the Arg-X and Lys-X bonds. Plasmin had the strongest effect on the .alpha..sub.s.sub.2-casein present in the substrate. Many peptides were identified at the C-terminal end and some at the N-terminal end. Proteinases of lactobacilli had less effect than the above mentioned enzymes. L. helveticus released more free amino acids and fewer peptides than did L. casei.
CC P (Milk and Dairy Products)
CT CASEIN; ENZYMES; PROTEINS; HYDROLYSIS

L7 ANSWER 19 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1989(07):P0041 FSTA
TI Physicochemical and functional properties of enzyme modified soy proteins for **cheese** analogs.
AU Kim, S. Y.
CS Texas A&M Univ., College Station, TX 77843, USA

SO Dissertation Abstracts International, B, (1988), 49 (6) 2010-2011: Order no. DA8815888, 141pp.
ISSN: 0419-4217
DT Dissertation
LA English
AB Ardex F and Supro 710 soy protein isolates were modified using alcalase, .alpha.-chymotrypsin, **trypsin**, liquozyme and rennet, in an attempt to improve their performance in cheese analogue products. Studies were made of the effects of enzyme types and hydrolysis time on the molecular and functional properties of the isolates. Further studies evaluated the textural properties and spreadabilities of cheese analogues. Results included the following. **Trypsin** was most effective and rennet least effective in increasing degree of hydrolysis, solubility and emulsifying capacity of both isolates. **Trypsin**-modified isolates had the lowest heat coagulabilities. Alcalase was most effective in decreasing hardness and fracturabilities and increasing springiness and spreadabilities of Ardex F cheese analogues during the initial 5 min incubation, but, at 30 min, .alpha.-chymotrypsin was as effective as alcalase. Liquozyme and rennet improved certain functional properties of Supro 710, as well as textural properties and spreadabilities of its cheese analogues, more effectively than those of Ardex F. Imitation mild Colby cheese could be produced using **trypsin**-modified Ardex F, but cheese spreadability needed to be improved.
CC P (Milk and Dairy Products)
CT ENZYMES; SIMULATED FOODS; SOY PRODUCTS; SOY PROTEINS; CHEESE ANALOGUES; CHEESE SUBSTITUTES; ENZYMIC MODIFICATIONS

L7 ANSWER 20 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1989(01):G0017 FSTA
TI [Manufacture of **cheese**-like product from whole soybean inoculated with Penicillium caseicolum.]
AU Matsuoka, H.; Fuke, Y.
CS Lab. of Food Chem., Tachikawa Coll. of Tokyo, 3-6-33, Azuma-cho, Akishima, Tokyo 196, Japan
SO Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi], (1988), 35 (3) 166-172, 20 ref.
ISSN: 0029-0394
DT Journal
LA Japanese
SL English
AB Soybeans (var. Tsurunoko) were (i) boiled at 100.degree.C for 2 h, ground and inoculated with Penicillium caseicolum followed by ripening at 23.degree.C for 2 wk and at 5.degree.C for 1 wk, or (ii) boiled at 120.degree.C for 30 min, ground and inoculated with P. caseicolum, followed by ripening at 15.degree.C for 3 wk. Moisture content (%), hardness (g) and **trypsin** inhibitor activity (U/mg) were (i) 69.2, 570 and 0.04 resp., and (ii) 70.9, 498 and 0.05 resp. Cooking at 120.degree.C for 30 min caused less browning of soybeans, higher acidity and greater protein degradation during ripening than cooking at 100.degree.C for 2 h. Water-soluble and trichloroacetic acid-soluble N-contents of (i) increased less than those of (ii). Amino acid composition of raw and cooked soybeans, and of (ii) are tabulated. [From En summ.]
CC G (Catering, Speciality and Multicomponent Foods)
CT BACTERIA; FUNGI; LEGUMES; PASTES; PENICILLIUM; SIMULATED FOODS; SOY PRODUCTS; SOYBEANS; STARTERS; CHEESE-LIKE PRODUCTS; LACTOBACILLACEAE; SOY LACTIC # CASEICOLUM

L7 ANSWER 21 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1988(11):V0040 FSTA
TI A **cheese**-like product, a process of its preparation and the use thereof.

IN Andersen, O.; Bojgaard, S. E.
PA Pasilac-Danish Turnkey Dairies A/S; Pasilac-Danish Turnkey, DK-8100 Aarhus C, Denmark
SO European Patent Application, (1988)
PI EP 261586 A2
PRAI DK 1986-4559 19860924
DT Patent
LA English
AB A cheese-like product, which is sliceable and grateable, is produced by ultrafiltration of a high protein vegetable milk. Although soymilk is preferred, protein extracts from a wide variety of other legumes and cereals could also be used. Optional additives to the soymilk include flavours, colours, pH adjusting agents, additional proteins of animal or vegetable origin, carbohydrates, bacterial cultures, and fats and oils. It is claimed that the .alpha.-galactoside and **trypsin** inhibitor content of the cheese-like products is small.
CC V (Patents)
CT BEVERAGES; CHEESE; LEGUMES; PATENTS; PROCESSING; SIMULATED FOODS; SOY PRODUCTS; CHEESE LIKE PRODUCTS; LIKE PRODUCTS; PATENT; SOYMILK

L7 ANSWER 22 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1987(03):P0100 FSTA
TI Profiles of proteinases in Gouda-type **cheese**.
AU Igoshi, K.; Kaminogawa, S.; Yamauchi, K.
CS Dep. Agric. Chem., Univ. Tokyo, Bunkyo-ku, Tokyo 113, Japan
SO Journal of Dairy Science, (1986), 69 (8) 2018-2026, 12 ref.
DT Journal
LA English
AB Proteinase-containing fractions were extracted from 5-month-old Gouda cheese at pH 3, 4 and 6 and proteinases in each fraction were separated by chromatography on CM-Sephadex or DEAE-cellulose; they were termed F.sub.3I and F.sub.3II, F.sub.4I, F.sub.4II and F.sub.4III and F.sub.6 in accordance with extraction pH. F.sub.3I was 100% inhibited by pepstatin; it degraded .alpha..sub.s.sub.1-casein and .beta.-casein into products with the same mobilities as .alpha..sub.s.sub.1-CN (f 24-199) and .beta.-CN (f 1-189) peptides. F.sub.3II was 70% inhibited by diisopropylfluorophosphate (DPF) and soybean **trypsin** inhibitor, and its action on casein produced fragments with mobilities equal to those of .gamma.-caseins, i.e. .beta.-CN (f 29-209), .beta.-CN (f 106-209) and .beta.-CN (f 109-209). Although F.sub.4 was 100% inhibited by pepstatin, patterns of casein degradation were different from those by F.sub.3I. F.sub.6 was strongly inhibited by DPF and EDTA. Based on optimum pH and inhibitory patterns, F.sub.4II and F.sub.3I are considered to be the same enzyme, as are F.sub.4III and F.sub.3II. F.sub.3I/F.sub.4II and F.sub.4I were acid proteinases, and F.sub.3II/F.sub.4III and F.sub.6 were serine proteinases.
CC P (Milk and Dairy Products)
CT CHEESE; PROTEINASES; CHEESES SPECIFIC; GOUDA TYPE; GOUDA TYPE CHEESE; PROFILES; PROFILES # GOUDA TYPE

L7 ANSWER 23 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1987(03):P0093 FSTA
TI Accelerated ripening of Ras **cheese** by using some enzymes.
AU Hefnawy, S. A.
CS Dairy Sect., Anim. Production Res. Inst., Min. of Agric., Dokki, Cairo, Egypt
SO Egyptian Journal of Dairy Science, (1986), 14 (1) 59-63, 9 ref.
DT Journal
LA English
SL Arabic
AB Addition of pepsin or **trypsin** to Ras cheese curd, at 0.9 and 0.6 g/7 kg curd, had no marked effect on moisture, fat, NaCl, pH and total N

values during ripening. However, soluble N after 0, 6 and 12 wk, resp., was 0.15, 0.87 and 0.96% in pepsin-treated cheese, vs. 0.17 , 0.67 and 0.75% in **trypsin**-treated cheese and 0.17, 0.62 and 0.73% in control cheese. Flavour scores (max. 40) and total sensory scores (max. 100) at 6 wk were 37 and 92, resp., for the pepsin-treated cheese vs. 30 and 80 for **trypsin**-treated cheese and 32 and 82 for control cheese.
CC P (Milk and Dairy Products)
CT CHEESE; CHEESE VARIETIES; PROTEINASES; RIPENING; ACCELERATION; CHEESES SPECIFIC; PEPSIN; PEPSINS; RAS; RAS CHEESE; **TRYPSIN**

L7 ANSWER 24 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1986(12):P0122 FSTA
TI A recommended method for producing Kachkaval **cheese** of good quality in a short period at low cost of production.
AU El-Gazzar, H.; Hefnawi, S.
CS Anim. Production Res. Inst., Agric. Res. Cent., Dokki, Cairo, Egypt
SO Agricultural Research Review, (1981, publ. 1984), 59 (6) 271-279, 10 ref.
DT Journal
LA English
SL Arabic
AB Kachkaval cheese was prepared from cows' whole milk or cows' milk to which was added dried skim milk to give casein/fat ratios of 0.89 or 1.11; enzyme preparations (pepsin, **trypsin** or lipase) were added to cheese curd instead of to milk. Composition and organoleptic properties of cheeses were evaluated before dry salting and after 6, 12 and 18 wk of ripening. Cheese made from cows' milk fortified with dried skim milk and with pepsin preparation (0.9 g pepsin powder dissolved in 100 ml water) sprinkled onto the curd (7 g) at the end of the kneading step scored highest points for flavour, body and texture, and showed enhanced ripening, a top quality cheese being produced within 6 wk. Addition of dried skim milk to cheese milk increased cheese yield and decreased cost of 1 kg cheese to 79.35% (casein/fat ratio 0.89) or 63.18% (ratio 1.11) of the cost of cheese made by the traditional method.
CC P (Milk and Dairy Products)
CT CHEESE; CHEESE VARIETIES; CHEESEMAKING; SENSORY PROPERTIES; CHEESES SPECIFIC; KACHKAVAL; KACHKAVAL CHEESE; ORGANOLEPTIC PROPERTIES; QUALITY HIGH

L7 ANSWER 25 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1985(01):P0155 FSTA
TI [Traditional utilization of milk in Asia. II. Changes in fatty acid and protein composition accompanying treatment of **cheeses**.]
AU Ochi, T.; Matsumoto, N.; Hatakeyama, E.; Saito, T.
CS Lab. of Food Hygiene, Tohoku Social Welfare Univ., Kunimi, Sendai 980, Japan
SO Journal of the Agricultural Chemical Society of Japan [Nihon Nogei Kagakkai-shi], (1983), 57 (9) 881-890, 27 ref.
DT Journal
LA Japanese
SL English
AB Changes in the composition of fatty acids and proteins caused by defatting and sun-drying during manufacture were examined in Oriental cheeses. Results were compared with European cheeses and some samples produced in the laboratory. Techniques used included GLC and polyacrylamide gel electrophoresis. Fat content of Hurood, Johi and Churbi cheeses was low compared with European cheeses. Oriental cheeses were characterized by a large quantity of palmitic acid and a small quantity of oleic acid. Ratio of stearic acid to oleic acid was approx. 1:3 in European cheeses. In Oriental cheeses, there was little oxidation of fatty acids and change in peroxide values caused by sun-drying during manufacture. Electrophoretograms after sun-drying showed no significant change in

protein composition of various types of cheeses. The phoretograms also revealed the variety of sources of milk from which Oriental cheeses were made. Bovine milk was mainly used for Hurood and Churbi cheeses. Goats' milk and/or mares' milk was probably used for Johi and Urum cheeses, because they lacked a bovine .alpha..sub.s.sub.1-casein band in the phoretogram. The casein components in these Oriental cheeses were not enzymically hydrolysed. **Trypsin** digestion and heating, as additional stages in the manufacturing process for Oriental cheeses, produced casein components of low mol. wt. It is suggested that quality of Oriental cheeses might be improved by proteolysis and lactic acid fermentation. Protein components were scarcely lost by whey draining, and complete utilization of protein in milk was possible by this method. [See FSTA (1984) 16 11P2396 for part I.]

CC P (Milk and Dairy Products)

CT ACIDS; CHEESE; CHEESEMAKING; FATTY ACIDS; PROTEINS; PROTEINS MILK; CHEESES SPECIFIC; CHURBI; CHURBI CHEESE; COMPOSITION # ORIENTAL; HUROOD; HUROOD CHEESE; JOHI; JOHI CHEESE; PROTEINS-FATTY # COMPOSITION

L7 ANSWER 26 OF 62 FSTA COPYRIGHT 2002 IFIS

AN 1984(02):P0467 FSTA

TI [Isolation of **trypsin**-like enzyme from **cheese** starter bacteria by affinity chromatography.]

AU Sukegawa, K.; Murasawa, H.

CS Dep. of Dairy Sci., Obihiro Univ. of Agric. & Vet. Med., Obihiro, Hokkaido, Japan

SO Japanese Journal of Dairy and Food Science [Rakuno Kagaku Shokuhin no Kenkyu], (1982), 31 (5) A153-A158, 13 ref.

DT Journal

LA Japanese

SL English

AB Of 56 colonies isolated after culturing a commercial Gouda cheese starter (Hansen culture No. CH-normal 01) at 1% in milk, 53 showed identical physiological properties to the reference strain of Streptococcus cremoris. A proteolytic enzyme was isolated from the bacteria by sonication and precipitation with (NH.sub.4).sub.2SO.sub.4 and was purified by affinity chromatography on a column of 4-aminobenzamidine bound to succinylated aminododecylcellulose and eluted with 0.1M glycine-HCl buffer (pH 2.0). The enzyme showed a single band on polyacrylamide gel electrophoresis (PAGE). Against casein in 0.1M phosphate buffer it had greatest activity at pH 8.95, and (at pH 7) at 50-60.degree. C; it was completely inactivated by heating at 75.degree. C for 10 min. The enzyme showed similar characteristics to bovine **trypsin** but migrated slightly more slowly on PAGE and showed only 11/2 of the activity of **trypsin** against casein.

CC P (Milk and Dairy Products)

CT CHEESE; CHEESE VARIETIES; ENZYMES; PROTEINASES; STARTERS; CHEESES SPECIFIC; GOUDA; GOUDA CHEESE; **TRYPSIN**; **TRYPSIN-LIKE**; **TRYPSIN-LIKE # GOUDA**

L7 ANSWER 27 OF 62 FSTA COPYRIGHT 2002 IFIS

AN 1984(01):P0089 FSTA

TI [HPLC separation of peptides from casein of cows' and goats' milk **cheese**.]
HPLC-Auftrennung von Peptiden aus Casein von Kuh- und Ziegenkaese.

AU Tobler, M.; Windemann, H.; Baumgartner, E.

CS Inst. fuer Lebensmittelchemie der Univ. Bern, Freiestrasse 1, CH-3012 Bern, Switzerland

SO Mitteilungen aus dem Gebiete der Lebensmitteluntersuchung und Hygiene, (1983), 74 (2) 132-139, 10 ref.

DT Journal

LA German

SL French; English

AB Caseins precipitated with acetic acid from pure goats' milk cheese and cows' milk cheese of the Camembert type, as well as caseins isolated by ion exchange chromatography from goats' and cows' milk, were hydrolysed with **trypsin**, and the peptides obtained were separated by HPLC on a reversed-phase column. The chromatograms were highly reproducible and quite distinctive for the caseins of each sp. The peptide spectra of caseins from ripened cheese were very similar to those of caseins from fresh cheese or from milk. This contrasted with electrophoresis, where peptide spectra for fresh cheese were quite different from those for ripened cheese.
CC P (Milk and Dairy Products)
CT CHEESE; GOATS; MILK; PEPTIDES; SPECTROSCOPY; CAMEMBERT-TYPE; CAMEMBERT-TYPE CHEESE; CHEESES SPECIFIC; GOATS MILK; GOATS MILK CHEESE; SPECTRA

L7 ANSWER 28 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1983(03):P0515 FSTA
TI Effect of adding **trypsin** and pepsin to brine solution on the ripening of White Soft **Cheese**.
AU Ismail, A. A.; El-Koussy, L.; Mostafa, R. A.
CS Dairy & Food Tech. Lab., Nat. Res. Cent., Dokki, Egypt
SO Egyptian Journal of Food Science, (1980, publ. 1982), 8 (1/2) 13-20, 19 ref.
DT Journal
LA English
SL Arabic
AB Batches of Domiati cheese were pickled in their own whey after it had been salted at 7 or 10% and treated with 0, 0.1 or 0.2 g **trypsin** or 0, 0.05 or 0.1 g pepsin/300 g cheese. Moisture content of all cheeses decreased during storage at room temp. for 12 wk, decrease being greatest in enzyme-treated pickling solution. Increasing the salt content of the pickling solution from 7 to 10% decreased fat % of the cheese, whilst addition of enzymes tended to increase fat %. Acidity developed more rapidly when the enzymes were present. At the lower enzyme concn. in 10% salted whey, cheese of good organoleptic quality was obtained after 4-8 wk, but showed a gradual deterioration of flavour thereafter. Abnormal flavour developed in cheese pickled in 7% salted whey at the higher enzyme concn.
CC P (Milk and Dairy Products)
CT BRINING; CHEESE; CHEESE VARIETIES; ENZYMES; PROCESSING; RIPENING; BRINING-ENZYMES; BRINING-ENZYMES # WHITE SOFT; CHEESES SPECIFIC; SOFT CHEESE; WHITE SOFT; WHITE SOFT CHEESE

L7 ANSWER 29 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1982(10):P1547 FSTA
TI Specificity of **cheese** protease towards the synthetic substrates.
AU Buruiana, L. M.; Farag, S. I.
CS Dep. of Biochem., Vet. Fac. of Bucharest, Bucharest, Romania
SO Egyptian Journal of Dairy Science, (1980), 8 (2) 145-149, 10 ref.
DT Journal
LA English
SL Arabic
AB Further investigations on the proteolytic activity of Telemea cheese [see FSTA (1981) 13 8P1502] showed that electrophoretic patterns generally correlated well with **trypsin**-like activity in fresh and 12-month-old Telemea cheeses, before and after incubation of the samples for 72 h at 37.degree. C and pH 8-9. Measurable **trypsin**-like activity on N-benzoyl-L d-arginine .beta.-naphthylamide (BANA) was found only in the incubated samples, and was 2.8 and 1.5 .mu.g .beta.-naphthylamide/g fresh and stored cheese resp. With complete degradation of the protein fraction, **trypsin**-like activity increased to 12.1 .mu.g .beta.-naphthylamide/g cheese. Milk-clotting

enzymes showed no hydrolytic activity on BANA or on 2 other synthetic substrates tested.
CC P (Milk and Dairy Products)
CT CHEESE; PROTEOLYSIS; STORAGE; CHEESES SPECIFIC; PROTEOLYTIC # STORED; PROTEOLYTIC # STORED TELEMEA; TELEMEA CHEESE

L7 ANSWER 30 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1982(06):P1000 FSTA
TI [Pepsin and **trypsin** proteolysis of casein in **cheeses** manufactured in USSR.]
AU Storozhuk, P. G.; Trusova, G. S.; Grablis, O. I.; Popova, Yu. A.
CS Kafedra Biol. Khimii, Kubanskii Med. Inst. Krasnodar, USSR
SO Voprosy Pitaniya, (1980), No. 4, 59-62, 9 ref.
DT Journal
LA Russian
SL English
AB (i) Sovetskii, (ii) Kostroma, (iii) Dutch-type, (iv) Rossiiskii, (v) Litovskii and (vi) Poshekhonskii hard cheeses; (vii) Suluguni pickled cheese; and (viii) Novyi, (ix) Rossiiskii, (x) Sovetskii and (xi) Kolbasnyi processed cheeses were examined. Total protein and free amino acids were determined by Kjeldahl and the ninhydrin reaction. Extent of pepsin and **trypsin** hydrolysis of dried comminuted defatted cheeses was carried out in the apparatus of Pokrovskii & Ertanov [Voprosy Pitaniya (1965) No. 3, 38] measuring the increase in free amino acids in the dialysate. Mean values for protein and free amino acid contents .mu.mol/100 g were (i) 22.7 and 49.6, (ii) 21.3 and 28.3, (iii) 23.0 and 25.1, (iv) 17.0 and 18.6, (v) 24.9 and 27.2, (vi) 24.3 and 79.7, (vii) 21.00 and 23.00, (viii) 15.1 and 33,0, (ix) 18.3 and 40.1, (x) 17.0 and 56.1, and (xi) 8.5 and 20.2. Graphs indicate that extent of pepsin hydrolysis decreased in hard cheese in the order (v) > (i) > (iii) > (ii) > (iv) > (vi), and for **trypsin** hydrolysis (iii) > (i) > (vi) > (v) > (iv) > (ii). For the pickled cheese and processed cheeses, the order with pepsin was (ix) > (viii) > (vii) > (x) > (xi); and with **trypsin** (vii) > (viii) > (ix) > (xi) > (x).
CC P (Milk and Dairy Products)
CT CASEIN; CHEESE; PROTEINASES; PROTEOLYSIS; PEPSIN; PEPSINS; **TRYPSIN**

L7 ANSWER 31 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1982(06):G0413 FSTA
TI [Manufacture of a **cheese**-like product from soybean milk. IV.]
AU Matsuoka, H.; Fuke, Y.
CS Dep. of Food & Nutr., Tachikawa Coll. of Tokyo, Azuma-cho, Akishima-shi, Tokyo, Japan
SO Journal of Japanese Society of Food Science and Technology [Nippon Shokuhin Kogyo Gakkaishi], (1977), 24 (11) 553-558, 10 ref.
DT Journal
LA Japanese
SL English
AB Soybean milk was coagulated by lactic fermentation using Streptococcus thermophilus, S. lactis or a mixture of S. thermophilus and S. lactis. The curds obtained were ripened by Penicillium caseicolum. Curd pH was approx. 6.5 after ripening for 2 wk. Contents of water-soluble N and free amino acids increased during ripening. Amino acids liberated in comparatively large amounts included glutamic acid, aspartic acid and lysine. In order to retard ripening, the curds were coated with paraffin after removal of surface mould, and stored at 5.degree. C. **Trypsin** inhibitor activity did not change during ripening. [From En summ.]
CC G (Catering, Speciality and Multicomponent Foods)
CT CURD; FERMENTATION; MILK; PENICILLIUM; RIPENING; SOY PRODUCTS; STREPTOCOCCUS; SOY MILK CURD; STREPTOCOCI # CASEICOLUM

L7 ANSWER 32 OF 62 FSTA COPYRIGHT 2002 IFIS

AN 1981(03):P0540 FSTA
TI Antimicrobial effects of N.sup..alpha.-palmitoyl-L -lysyl-L -lysine ethyl ester dihydrochloride and its use to extend the shelf life of creamed Cottage **cheese**.
AU Mills, C. J.; Richardson, T.; Jasensky, R. D.
CS Dep. of Food Sci., Univ. of Wisconsin, Madison, Wisconsin 53706, USA
SO Journal of Agricultural and Food Chemistry, (1980), 28 (4) 812-817, 18 ref.
DT Journal
LA English
AB The antimicrobial acyldipeptide N.sup..alpha.-palmitoyl-L -lysil-L -lysine ethyl ester dihydrochloride (R-1) was synthesized, and its activity was tested against spoilage organisms and pathogens sometimes found in dairy products. Antimicrobial activity was observed at <10 .mu.g/ml in nutrient broth. R-1 concn. of 500 .mu.g/ml were required to inhibit spoilage organisms added to sterile reconstituted dried skim milk. A bacteriostatic effect was observed for Staphylococcus aureus in vanilla pudding held at 21.degree. C using R-1 at 1500 .mu.g/g. The shelf-life of creamed Cottage cheese stored at 7.degree. C was extended 2-3-fold (to about 26 days) at an R-1 concn. of 750 .mu.g/g. The shelf-life of creamed Cottage cheese stored at 7.degree. C, inoculated with Pseudomonas putrefaciens or Achromobacter pestifer was extended 2-3-fold over the control at anR-1 concn. of 1500 .mu.g/g. At concn. of 1500 .mu.g/g in creamed Cottage cheese, R-1 lent a bitter taste to the product. The inhibitor may have potential application as a sanitizing agent at a level of 50 .mu.g/ml. Almost complete hydrolysis of the compound to lysine was effected with **trypsin** and pancreatin.
CC P (Milk and Dairy Products)
CT BACTERIA; CHEESE; CHEESE VARIETIES; DAIRY PRODUCTS; DESSERTS; INHIBITION; MICROORGANISMS; PEPTIDES; PSEUDOMONAS; SHELF LIFE; SPOILAGE; STAPHYLOCOCCUS; VANILLA; ACHROMOBACTER; ACYLPEPTIDES; ACYLPEPTIDES # AUREUS; ACYLPEPTIDES # ORGANISMS; ACYLPEPTIDES MICROBIAL; CHEESES SPECIFIC; COTTAGE; COTTAGE CHEESE; KEEPING QUALITY; MICROBIAL; PESTIFER; PSEUDOMONADACEAE; PUDDINGS; PUTREFACIENS; VANILLA PUDDINGS

L7 ANSWER 33 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1980(07):P1356 FSTA
TI Morphological, ultrastructural and rheological characterization of Cheddar and Mozzarella **cheese**.
AU Taranto, M. V.; Wan, P. J.; Chen, S. L.; Rhee, K. C.
CS Dep. of Food Sci., Univ. of Illinois, Urbana, Illinois 61801, USA
SO Scanning Electron Microscopy, (1979), 1979 (3) 273-277, 19 ref.
DT Journal
LA English
AB Commercial Cheddar and Mozzarella cheeses were characterized by **trypsin**-etching scanning electron microscopy, transmission electron microscopy and transmitted light microscopy, and rheological properties were evaluated by objective testing methods. The fat globules in Cheddar cheese were non-uniformly distributed and tended to aggregate as a direct consequence of the cheddaring process. Mozzarella cheese, containing less fat, exhibited larger fat globules which were uniformly scattered throughout the protein matrix with little aggregation. Cheddar cheese exhibited an open, fibrous protein matrix while the Mozzarella had a compact protein matrix with no specific orientation, i.e. it had been manufactured without stretching the curd during processing. Compression tests indicated that the Cheddar cheese required a larger compression force for a given deformation (hardness) than the Mozzarella. The Mozzarella exhibited a larger work ratio of the first 2 consecutive compressions (cohesiveness), elastic recovery or recovered height (springiness) and adhesiveness (gumminess) than the Cheddar cheese.
CC P (Milk and Dairy Products)
CT CHEESE; CHEESE VARIETIES; MICROSCOPY; RHEOLOGICAL PROPERTIES; CHEDDAR;

CHEDDAR CHEESE; CHEESES SPECIFIC; MICROSCOPIC; MICROSCOPIC # CHEDDAR; MOZZARELLA; MOZZARELLA CHEESE

L7 ANSWER 34 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1980(07):G0499 FSTA
TI The effect of coagulants on protein content and amino acid composition of soybean-**cheese** whey curd.
AU Yao, M.-L.; Peng, A. C.
CS Ohio State Univ., 190 North Oval Drive, Columbus, Ohio 43210, USA
SO Research Circular. Ohio Agricultural Research and Development Center, (1979), No. 250, 48-51, 11 ref.
DT Journal
LA English
AB Soybean milk, prepared from an aqueous slurry of ground beans (final meal: water ratio 1:10 w/w), was boiled for .gtoreq.15 min to destroy any **trypsin** inhibitor present. A sodium cheese whey protein concentrate was dispersed in hot water at a ratio of 1:10 w/v. The soybean milk and cheese whey preparation were then mixed in ratios ranging from 100:0 to 0:100. Curd was prepared from these mixtures by adding coagulants (selected after preliminary evaluation of several coagulants for their suitability for curd production). The coagulants used were (w/v): (i) 0.6% glucono-delta-lactone (GDL); (ii) 0.6% GDL + 0.05% CaSO.sub.4; and (iii) 0.6% GDL + 0.17% MgCl.sub.2. The curd formed was allowed to stand for 30 min, then the serum was separated by straining through cheese cloth and the curd subjected to pressure (0.036 lb/in.sup.2) for 15 min. The pressed curd was then examined for aroma (by a taste panel), textural properties (by a penetrometer), pH, moisture content, yield, protein content and amino acid composition. A soybean curd prepared with 0.25% CaSO.sub.4 served as a control. Results indicated that the soybean milk/cheese whey curds studied have acceptable aroma and texture, a good yield, acceptable moisture and protein contents and a promising amino acid composition. It is suggested that the curds could provide an inexpensive source of protein and could also form the basis of new food products such as non-dairy yoghurt and pie fillings. The product is covered by US Patent 4 105 803 of 8 Aug., 1978 [see FSTA (1979) 11 8G645].
CC G (Catering, Speciality and Multicomponent Foods)
CT ADDITIVES; COAGULATION; CURD; LACTONES; PROTEIN PRODUCTS; SOY PRODUCTS; WHEY; COAGULANTS; GLUCONO- Ne -LACTONE; QUALITY; SOY MILK-CHEESE; SOY MILK-CHEESE WHEY CURD; SOY MILK-CHEESE WHEY PROTEIN PRODUCTS

L7 ANSWER 35 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1980(01):P0190 FSTA
TI [Study of proteolytic enzyme hydrolysis of proteins of **cheese** whey used for lactose production.]
In ''Intensifikatsiya Protsessov Proizvodstva Natural'nykh Syrov i Sovershenstvovanie ikh Tekhnologii'' [see FSTA (1980) 12 1P109].
AU Khramtsov, A. G.; Yatsenko, A. M.; Umanskii, M. S.; Union of Soviet Socialist Republics Erevanskii Zootekhnichesko-veterinarnyi Institut [Symposium]
CS Severo-Kavkazskii Filial VNIIMS, Stavropol', USSR
SO (1977), pp. 135-136
DT Conference
LA Russian
AB Pancreatin, **trypsin** and 2 enzyme preparations from Thermoactinomyces vulgaris and Actinomyces thermovulgaris were tested for protein hydrolysis at 55-60.degree. C in cheese whey neutralized to pH 7 by addition of 10% NaOH solution. No further details of procedure are given. % hydrolysis were, resp., 66, 74, 97 and 80.
CC P (Milk and Dairy Products)
CT CHEESE; LACTOSE; PROTEINS; PROTEINS MILK; PROTEOLYSIS; WHEY; CHEESE WHEY; HYDROLYSIS; WHEY PROTEINS

L7 ANSWER 36 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1979(08):G0645 FSTA
TI Soybean-**cheese** whey food product.
IN Peng, A. C.
PA United States of America, Ohio Agricultural Research & Development Centre
SO United States Patent, (1978)
PI US 4105803
DT Patent
LA English
AB An aqueous 1:1 mixture of cheese whey protein concentrate and soybean milk concentrate (the latter having been heated separately to deactivate **trypsin** inhibitor) is heated to <110.degree. C before the addition of 0.6% glucono-delta-lactone in order to precipitate a soybean-whey curd from the aqueous mixture. The resultant product is a white, soft, gelatinous mass with a bland aroma, desirable moisture content and advantageous amino acid composition.
CC G (Catering, Speciality and Multicomponent Foods)
CT CURD; PATENTS; SOY PRODUCTS; WHEY; PATENT; SOY WHEY CURD PRODUCTS; UNITED STATES OF AMERICA; USA

L7 ANSWER 37 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1979(06):P1021 FSTA
TI [Isolation of proteolytic enzyme in Gouda **cheese** by affinity chromatography.]
AU Sukegawa, K.; Uchikawa, H.; Kato, M.
CS Dep. of Dairy Sci., Obihiro Univ. of Agric. & Vet. Med., Obihiro, Hokkaido, Japan
SO Journal of the Agricultural Chemical Society of Japan [Nihon Nogei Kagakkai-shi], (1978), 52 (4) 175-180, 13 ref.
DT Journal
LA Japanese
SL English
AB A **trypsin**-like enzyme was isolated from 3-months ripened Gouda cheese by (NH.sub.4).sub.2SO.sub.4 fractionation, gel filtration on Sephadex G-75 and affinity chromatography on a column of 4-aminobenzamidine bound to succinylated aminododecylcellulose. The enzyme was present at 23 mg/g cheese, and was almost homogeneous in tests with polyacrylamide disk gel electrophoresis (PAGE). Optimum pH and temp. were 8.0 and 55.degree. C, resp., for action on a casein substrate in 0.1M phosphate buffer; the enzyme was stable at pH 8.0-9.5. These properties are generally similar to those of bovine **trypsin** (BT) but the cheese enzyme differed in its specific activity towards casein, BT being 12x more active. The rate of migration of the enzyme from cheese during PAGE was less than that of BT. [From En summ.]
CC P (Milk and Dairy Products)
CT CHEESE; CHEESE VARIETIES; PROTEINASES; CHEESES SPECIFIC; GOUDA; GOUDA CHEESE; PROTEOLYTIC ENZYMES

L7 ANSWER 38 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1979(06):P0952 FSTA
TI Solubilization of **cheese** whey protein by **trypsin** and a process to recover the active enzyme from the digest.
AU Monti, J. C.; Jost, R.
CS Res. Dep., Nestle Products Tech. Assistance Co. Ltd., CH-1814 La Tour-de-Peilz, Switzerland
SO Biotechnology and Bioengineering, (1978), 20 (8) 1173-1185, 17 ref.
DT Journal
LA English
AB Porcine **trypsin** (EC 3.4.4.4) converted, within approx. 2 h at 50.degree. C, its 1000-fold wt. of water-insoluble, heat-denaturated cheese whey protein into a water-soluble product. In the course of this digestion, the enzyme increased the .alpha.-amino N of the protein by a

factor of >20, from 0.40 to 9.40%. After digesting the water-insoluble whey protein, fully active **trypsin** could be recovered from the soluble digest with the aid of a cellulose-based affinity adsorbent. The enzyme which was eluted from a column of p-aminobenzamidine, bound to succinylated aminododecylcellulose, was fully active and showed essentially unchanged kinetic properties with a synthetic substrate, L -benzoyl-arginine p-nitroanilide. It was possible to perform, with the same amount of **trypsin**, 3 subsequent and equally effective solubilizations of whey protein, followed by a 4th digestion which still yielded a soluble product, but was considerably slower and incomplete. During each digestion, an estimated 30% of the **trypsin** was lost. The loss was not due to a decreased efficiency of the affinity adsorbent, as its **trypsin**-binding capacity was essentially unaffected after >10 cycles of use.

CC P (Milk and Dairy Products)

CT CHEESE; PROTEINASES; PROTEINS; PROTEINS MILK; SOLUBILITY; WHEY; CHEESE WHEY; CHEESE WHEY PROTEINS; SOLUBILIZATION; **TRYPSIN**; WHEY PROTEINS

L7 ANSWER 39 OF 62 FSTA COPYRIGHT 2002 IFIS

AN 1979(03):P0398 FSTA

TI Enzymatic solubilization of heat-denatured **cheese** whey protein.

AU Monti, J. C.; Jost, R.

CS Res. Dep., Nestle Products Tech. Assistance Co. Ltd., Case Postale 1009, Lausanne, CH-1001, Switzerland

SO Journal of Dairy Science, (1978), 61 (9) 1233-1237, 11 ref.

DT Journal

LA English

AB Resolubilization of heat-denatured cheese whey protein was achieved by partial enzymic hydrolysis of the protein with food-grade proteases. The efficiency with which porcine **trypsin**, papain and neutral protease from Bacillus subtilis solubilized the water-insoluble protein was compared by measuring the % of water-soluble N of the corresponding digests. The tryptic digest was completely soluble at neutral pH and was >90% water-soluble at pH 6.0. This digest had a pronounced solubility min. of 65% at pH 4.5. Neutral protease gave a digest with similar pH dependence of the solubility, but the % of water-soluble N were all below those of the tryptic digest. Papain gave a digest with max. solubility at pH 3.0 and approx. 80% solubility at neutral pH. The solubility min. was again at pH 4.5. **Trypsin** proved the most potent protease for solubilizing heat-denatured whey protein. With this enzyme, a water-soluble whey protein preparation was obtained which contained 13.2% N, 4.53% fat, 2.6% moisture, 0.23% lactose and 2.9% ash.

CC P (Milk and Dairy Products)

CT CHEESE; DENATURATION; HEATING; PROTEINASES; PROTEINS; PROTEINS MILK; SOLUBILITY; WHEY; CHEESE WHEY; CHEESE WHEY PROTEINS; DENATURED; HEAT; SOLUBILIZATION; WHEY PROTEINS

L7 ANSWER 40 OF 62 FSTA COPYRIGHT 2002 IFIS

AN 1976(06):P1079 FSTA

TI Microstructure of Cheddar **cheese**: sample preparation and scanning electron microscopy.

AU Eino, M. F.; Biggs, D. A.; Irvine, D. M.; Stanley, D. W.

CS Dep. of Food Sci., Univ. of Guelph, Guelph, Ontario, Canada

SO Journal of Dairy Research, (1976), 43 (1) 109-111, 6 ref.

DT Journal

LA English

AB 3 techniques were used for preparing Cheddar cheese specimens for examination by scanning electron microscopy. Resulting micrographs prepared from fresh cheese made with calf rennet revealed that while all the techniques were satisfactory, different structural features were observed depending upon the method used. A modified critical-point drying

technique and a freeze-drying method displayed surface features whereas **trypsin** hydrolysis showed internal microsructure. The surface microstructure of the cheese was protein aggregated and fused into structural units of 1-5 .mu.m. The internal microstructure appeared to be thin compact walls. Cross sections prepared by freeze-drying displayed arrays in the protein matrix and locations where fat globules had been embedded.
CC P (Milk and Dairy Products)
CT CHEESE; CHEESE VARIETIES; ELECTRON MICROSCOPY; CHEDDAR; CHEDDAR CHEESE; MICROSTRUCTURE

L7 ANSWER 41 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1976(05):P0937 FSTA
TI Accelerating the ripening of Domiatti and Memphis **cheeses**.
AU Nofal, A. A.; Abou-Dawood, A. E.
CS Tanta Univ., Egypt
SO Research Bulletin, Faculty of Agriculture (K.E.S.), Tanta University, (1975), No. 7, 10pp., 7 ref.
DT Journal
LA English
SL Arabic
AB Domiati cheeses were made from a batch of buffaloes' milk using (i) 1.2 g powdered rennet, (ii) 20 ml of a **trypsin** hydrolysate of milk + 0.6 g powdered rennet, (iii) 20 ml **trypsin** hydrolysate + 0.9 g pepsin or (iv) 1.8 g pepsin/20 kg milk. Memphis cheeses were also manufactured by methods (i), (ii) and (iii). Measurement of the moisture content, acidity, total N, soluble N, non-protein N, .alpha.-amino N and salt content of freshly prepared cheeses and of cheeses stored 1-3 months showed that method (ii) accelerated the ripening and improved the cheese quality.
CC P (Milk and Dairy Products)
CT CHEESE; CHEESE VARIETIES; RIPENING; ACCELERATION # DOMIATI; ACCELERATION # MEMPHIS; DOMIATI CHEESE

L7 ANSWER 42 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1975(06):P1319 FSTA
TI [Influence of copper on proteolytic enzymes of **cheese**.] Einfluss des Kupfers auf proteolytische Enzyme des Kaeses.
AU Kirschmeier, O.; Lanksch, R.; Kiermeier, F.
CS Chem. und Physikalisches Inst., D-8050 Weihenstephan, Federal Republic of Germany
SO Zeitschrift fuer Lebensmittel-Untersuchung und -Forschung, (1974), 156 (4) 224-230, 6 ref.
DT Journal
LA German
SL English
AB Activities of **trypsin**, chymotrypsin, pepsin and carboxypeptidase, but not that of rennin, were reduced by presence of Cu.sup.2.sup.+ in the 0.1-10 mM range. Proteolysis of paracasein by enzymes present in extracts of Camembert cheese was also inhibited by Cu.sup.2.sup.+, the inhibition being most marked in the proteolysis of the .alpha.-casein fraction. Inhibitory effects were greatest where the enzyme extracts were prepared from Camembert cheese in the earlier stages of ripening.
CC P (Milk and Dairy Products)
CT CHEESE; COPPER; PROTEINASES; CU; PROTEASES; PROTEOLYTIC ENZYMES

L7 ANSWER 43 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1975(01):J0094 FSTA
TI [Manufacture of a **cheese**-like product from soybean milk. II. Changes in **trypsin** inhibitor activity during heat treatment and curd formation from soybean milk.]

AU Matsuoka, H.; Sasago, K.
CS Tachikawa Coll., Akishima, Tokyo, Japan
SO Journal of Food Science and Technology [Nihon Shokuhin Kogyo Gakkai-shi], (1972), 19 (6) 262-267, 8 ref.
DT Journal
LA Japanese
SL English
AB Heating soybean milk samples of concn. 5, 10 and 15% at 100.degree.C for 10 min, at 100.degree.C for 20 min, at 120.degree.C for 10 min, or at 120.degree.C for 20 min decreased the **trypsin** inhibitor (TI) activity to 32.8-33.9, 27.4-31.3, 10.8-15.1 and 3.5-8.1%, respectively. TI activity (units/mg DM) was 0.31 and 0.05 in whey samples heated at 100.degree.C for 10 min or 120.degree.C for 20 min respectively. In curd samples, the corresponding figures were 0.19 and 0.09. The total TI activity was higher in curd than in whey. Penicillium casei-colum used as the starter to prepare a cheese-like product from soybean milk produced 3 proteases with optimum pH at 6.5 and 7.6. Proteinase activities were scarcely inhibited by adding raw soybean milk or curd made from heated soybean milk. [See Journal of Food Science and Technology, Japan (1968) 15 (3) 103 for part I.]
CC J (Fruits, Vegetables and Nuts)
CT CURD; ENZYME INHIBITORS; HEATING; MILK; PROTEINASES; SOYBEANS; DECREASE; HEATED; INHIBITORY SUBSTANCES; SOY; SOY MILK; **TRYPSIN**; **TRYPSIN INHIBITORS**

L7 ANSWER 44 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1974(09):P1260 FSTA
TI The use of casein and whey protein hydrolysates in white soft **cheese** making.
AU Hofi, A. A.; Mahran, G. A.; Farahat, S. M.; Ashour, M.; Khorshid, M. A.
CS Food Sci. Dept., Fac. of Agric., Ein-Shams Univ., Cairo, United Arab Republic
SO Egyptian Journal of Dairy Science, (1973), 1 (2) 159-162, 7 ref.
DT Journal
LA English
SL Arabic
AB Pickled Domiati cheese, the National soft type in Egypt, normally acquires its characteristic flavour within a ripening period of 2-3 months. That pickling period was reduced to 2 wk by treating cheese milk with 0.5% casein acid hydrolysate to 4 wk by using 0.125% whey protein acid hydrolysate and to 8 wk by using 0.125% tryptic hydrolysate of casein or whey protein. Peptic hydrolysates of casein and whey protein yielded cheeses that were bitter and of inferior qualities.
CC P (Milk and Dairy Products)
CT CASEIN; CHEESE; CHEESE VARIETIES; CHEESEMAKING; FLAVOUR; PICKLING; PROTEINASES; RIPENING; WHEY; DOMIATI; DOMIATI CHEESE; HYDROLYSATE; PEPSIN; PEPSINS; PEPTIC; **TRYPSIN**; TRYPTIC

L7 ANSWER 45 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1973(08):P1239 FSTA
TI An experimental continuous-culture unit for the production of frozen concentrated **cheese** starters.
AU Lloyd, G. T.; Pont, E. G.
CS Dairy Res. Lab., Div. of Food Res., CSIRO, Melbourne, Australia
SO Journal of Dairy Research, (1973), 40 (2) 149-155, 19 ref.
DT Journal
LA English
AB Equipment and methods are described for the production, on a laboratory scale, of frozen conc. cheese starters. A single-stage Porton-type fermenter with a working vol. of 3-5 l. was used for the continuous culture of Streptococcus lactis and Str. cremoris starter strains. The cells grown in **trypsin**-digested cheese-whey or **trypsin**

-digested skim-milk, both containing autolysed yeast [1%], were harvested with a Sharples laboratory super-centrifuge resuspended in skim-milk and layer-frozen in liquid N.sub.2. The frozen culture was crushed to a granular free-flowing form which facilitated direct addition to and ready disperison in cheese milk. The cultures were stored at - 196.degree.C.
CC P (Milk and Dairy Products)
CT CHEESE; CHEESEMAKING; STARTERS; CHEESE STARTERS; FROZEN

L7 ANSWER 46 OF 62 FSTA COPYRIGHT 2002 IFIS
AN 1973(02):P0153 FSTA
TI A study of the sub-microscopic structure of Cheddar, Cheshire and Gouda **cheese** by electron microscopy.
AU Hall, D. M.; Creamer, L. K.
CS Physics & Eng. Lab., Dept. of Sci. & Ind. Res., Lower Hutt, New Zealand
SO New Zealand Journal of Dairy Science and Technology, (1972), 7 (3) 95-102, 8 ref.
DT Journal
LA English
AB Specimens (5 x 3 x 2 mm) of Cheshire, Cheddar and vat-salted Gouda cheeses and Cheddar cheeses 'cooked' at 33.5 and 39.5.degree.C were etched with **trypsin** in pH 9.0 phosphate buffer for 1 h at room temp. to remove surface protein, freeze-dried, coated with 20 nm C and 2 layers of Au/Pd under vacuum and examined by scanning electron microscopy (SCEM). Freeze-etch replicas for transmission electron microscopy (TEM) were prepared by immersion of specimens in 30% v/v glycerol/water, frozen immediately in liquid Freon 12, shadowed with Pt/C under vacuum, coated with 20 nm C, the cheese removed with 40% w/v chromic acid solution and the replica cleaned. It was considered that SCEM examination aided subsequent TEM interpretation. Fat globule distribution shown by SCEM was even in Cheshire cheese, layered ('onion-skin') in Gouda and non-uniform with some rupturing and aggregation in Cheddar cheese; greater detail was apparent with TEM. High magnification of replicas indicated the presence of aligned particles in the protein matrix, particularly of Cheddar cheese. Particles spaced at about 13 nm intervals were present in Cheddar cheese, short (3-4 nm) chains in Cheshire and 10-15 nm globular particles in Gouda cheese. It was suggested that the extent of particle alignment was dependent on the cheddaring process. Size of protein particles tended to decrease with lower ph during cheesemaking.
CC P (Milk and Dairy Products)
CT CHEESE; DISTRIBUTION; ELECTRON MICROSCOPY; FAT; MILK (FATS); MILK (PROTEINS); PROTEIN

L7 ANSWER 47 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 575867 FROSTI
TI Development of a membrane filtration method for enumeration of Listeria monocytogenes from soft **cheese**.
AU Gnanou Besse N.; Lafarge V
SO Food Microbiology, 2001, (December), 18 (6), 669-676 (15 ref.)
Published by: Harcourt Publishers Ltd Address: Harcourt Place, 32 Jamestown Road, London NW1 7BY, UK Telephone: +44 (20) 8308 5700
Web: www.academicpress.com
ISSN: 0740-0020
DT Journal
LA English
SL English
AB There are official methods for the enumeration of Listeria monocytogenes in food, such as ISO 11920-2. However, this method is reported to have a detection limit of 10-100 cfu per gram and suffers from poor accuracy, which is a drawback for foods with low contamination levels (i.e. less than 100 cfu per gram). Even at this level, contamination can still present a risk to consumers. A new and simple method to quantify low levels (i.e. less than 50 cfu per gram) of L. monocytogenes in soft

cheese is described. A 1-g sample of cheese was used, and cellulose ester membrane filtration (0.45 microns pore size) was applied to enrich L. monocytogenes from the cheese suspension, before culture of the filter on a Palcam agar. A tween 80-**trypsin** pre-treatment to improve filtration did not reduce L. monocytogenes counts. The method is claimed to be more precise than ISO 11290-2 when tested using artificially contaminated cheese. No improvements in repeatability and reproducibility are reported, which is said to be because the media does not distinguish between listeria species.

SH ANALYSIS
CT BACTERIA; CHEESE; DAIRY PRODUCTS; DETERMINATION; ENRICHMENT; ENUMERATION; FILTRATION; IMPROVEMENTS; LISTERIA; LISTERIA MONOCYTOGENES; MEMBRANE FILTRATION; MICROORGANISMS; OFFICIAL METHODS; PERFORMANCE; SOFT CHEESE
DED 22 Feb 2002

L7 ANSWER 48 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 484947 FROSTI
TI ELISA for differential quantitation of plasmin and plasminogen in **cheese**.
AU Dupont D.; Grappin R.
SO Journal of Dairy Research, 1998, (November), 65 (4), 643-651 (24 ref.)
ISSN: 0022-0299
DT Journal
LA English
SL English
AB Plasminogen is a precursor of plasmin, a serine proteinase with an activity similar to that of **trypsin**. Bovine plasmin and plasminogen are thought to have a significant role in proteolysis during cheese ripening. This study aimed to improve the ELISA procedure for milk and cheese analysis and its application to the determination of bovine plasmin and plasminogen experimental and commercial cheeses. The assay used two monoclonal antibodies - one specific for plasminogen and the other cross-reacting with plasmin and plasminogen. The ELISA was used to determine plasmin and plasminogen in semi-hard cheeses on a pilot scale, and the values were compared with levels in corresponding wheys and unripened cheeses. The findings showed that this ELISA could be used for characterizing the proteolysis caused by plasminogen during cheese ripening.
SH DAIRY PRODUCTS
CT ANTIBODIES; CHEESE; DAIRY PRODUCTS; DEGRADATION; DETERMINATION; ELISA; IMMUNOASSAYS; MONOCLONAL ANTIBODIES; PLASMIN; PLASMINOGEN; PROTEOLYSIS; RIPENING
DED 20 Jan 1999

L7 ANSWER 49 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 470630 FROSTI
TI The effect of added proteolytic enzymes on meltability of Mozzarella **cheese** manufactured by ultrafiltration.
AU Spinner Madsen J.; Bzuun Qvist K.
SO Lait, 1998, (March-April), 78 (2), 259-272 (44 ref.)
DT Journal
LA English
SL English; French
AB The use of ultrafiltration methods in the production of Mozzarella cheese has resulted in cheese with poor melting properties. This study attempted to improve the melting properties of UF-manufactured Mozzarella cheese by using four proteinases (Neutrase, Bacillus licheniformis proteinase (BLP), porcine **trypsin** (PT) and Fusarium oxysporum proteinase (FOP)), in its production. The composition (e.g. fat and protein content) of rententate and cheeses was determined. The extent of proteolysis, sensory properties and meltability of the cheeses were assessed. The results showed that the improvement of proteolysis by adding proteinases

(Neutrase and BLP) generally improved the melting properties of the cheese. However, Neutrase caused the cheeses to become bitter. The **trypsin** proteinases PT and FOP did not improve proteolysis.
SH DAIRY PRODUCTS
CT CHEESE; DAIRY PRODUCTS; ENZYMES; MELTING; MOZZARELLA CHEESE; PROTEINASES; PROTEOLYSIS; ULTRAFILTRATION
DED 3 Jul 1998

L7 ANSWER 50 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 469732 FROSTI
TI Inhibitory activity against plasmin, **trypsin**, and elastase in rennet whey and in **cheese** fortified with whey protein.
AU Benfeldt C.; Sorensen J.; Petersen T.E.
SO Journal of Dairy Science, 1998, (March), 81 (3), 615-620 (24 ref.)
DT Journal
LA English
SL English
AB A method was developed for examining the activity of proteinase inhibitors in samples of whey and cheese and for evaluating the effect of whey proteins on the proteolytic digestion of casein during cheese ripening. The method was used for comparing the activities of protein inhibitors against **trypsin**, elastase, and plasmin in samples of Danbo 45-plus manufactured from milk pasteurized at 72-90 C for 15-60 seconds, the corresponding rennet whey fractions and Havarti 45-plus manufactured from milk concentrated by ultrafiltration 1.8-4.6 times. A colorimetric assay showed that incorporation of thermally denatured whey proteins into the cheese curd by pasteurization resulted in decreased proteinase inhibitory activity against **trypsin** and elastase in Danbo 45-plus and against **trypsin**, elastase and plasmin in the rennet whey fractions. Incorporation of whey proteins into Havarti 45-plus by ultrafiltration of the cheese milk resulted in increased proteinase inhibitory activity against **trypsin** and elastase.
SH DAIRY PRODUCTS
CT CHEESE; ELASTASE; PASTEURIZATION; PLASMIN; PROTEINASE INHIBITORS; RENNET WHEY; **TRYPSIN**; ULTRAFILTRATION; WHEY PROTEIN
DED 23 Jun 1998

L7 ANSWER 51 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 432370 FROSTI
TI Qualitative changes in soy proteins in the production of soya **cheese**.
AU Zhang Y.; Kershaw J.; Ainsworth P.
SO Agri-food quality: an interdisciplinary approach; proceedings of a conference, Norwich, June 1995., Published by: RSC, Cambridge, 1996, 289-292 (9 ref.)
Fenwick G.R.
ISBN: 0-85404-711-5
DT Conference Article
LA English
AB Proteolysis during ripening has an important role in flavour and texture development of non-dairy cheese made from soya milk. Changes in soya proteins during the production of soya cheese were studied by polyacrylamide gel electrophoresis. The production process included a heat treatment stage to inactivate lipoxygenase and to destroy **trypsin** inhibitor. Ultra heat treatment had little effect on the sub-unit composition of soya-milk proteins, but altered the arrangement of sub-units in the quaternary structure. Disulfide bonding was involved in the structure of the high-molecular-weight protein complexes formed during the heat treatment process. The coagulant used in curd production affected the texture and amount of proteins precipitated.
SH PROTEINS
CT CHEESE; PRODUCTION; PROTEINS; SOYA MILK; SOYA PRODUCTS; SOYA PROTEIN;

SOYA PROTEINS; VEGETABLE MILKS
DED 12 Feb 1997

L7 ANSWER 52 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 332010 FROSTI
TI Acid and semi-alkaline proteinase in Swiss-type **cheese**.
AU Igoshi K.; Arima S.
SO Milchwissenschaft, 1993, 48 (11), 623-626 (10 ref.)
DT Journal
LA English
SL English; German
AB Proteases were extracted from Emmental and Gruyere cheeses and separated by chromatography on CM-Sephadex columns. Two fractions were obtained in each case. The first protease fraction from Emmental was most active in the pH range 3.8 to 4.0 and was strongly inhibited by pepstatin. During polyacryl amide gel electrophoresis, products with the same moieties as alpha-S-1-1- and beta-1 casein were formed by the action of this fraction on casein. The rate at which kappa-casein was completely decomposed was no faster than that for alpha-S-1-casein. The second protease fraction from Emmental was mainly inhibited by soya **trypsin** inhibitor and diisopropyl fluorophosphate with the formation of fragments having the same mobility as gamma-casein. The two protease fractions obtained from Gruyere were eluted at the same concentrations of sodium chloride as the Emmental proteases and had similar properties. The first and second enzyme fractions of both cheeses were concluded to be the acid and alkaline proteases of milk, respectively.
SH BIOCHEMISTRY
CT CHEESE; DEGRADATION; ENZYMES; FLAVOUR; FORMATION; IDENTIFICATION; MILK; MILK PROTEIN; MILK PROTEINS; PROPERTIES; PROTEASES; PROTEINS; TEXTURE
DED 4 Jan 1994

L7 ANSWER 53 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 266234 FROSTI
TI Microfluidized liposomes for the acceleration of **cheese** ripening.
AU Lariviere B.; El Soda M.; Soucy Y.; Trepanier G.; Paquin P.; Vuillemard J.C.
SO International Dairy Journal, 1991, 1 (2), 111-24 (24 ref.)
DT Journal
LA English
SL English
AB Multilamellar, multilamellar-microfluidised, microfluidised and dehydrated-rehydrated liposomes were prepared and characterised in terms of their mean diameters and encapsulation efficiencies. Free and encapsulated **trypsin** in microfluidised liposomes were compared in a test trial for the acceleration of Cheddar cheese ripening. Protein degradation was increased in both free and entrapped enzyme cheeses compared with control cheese. The action of the encapsulated enzyme was progressive compared with the free-enzyme-treated cheese. Fracturability and firmness of the entrapped **trypsin** cheese were lower than in the control but cohesion was similar.
CT ACCELERATION; CHEESE; ENZYMES; LIPOSOMES; RATE; RIPENING
DED 24 Sep 1991

L7 ANSWER 54 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 255794 FROSTI
TI Accelerating the ripening of **cheese** by the addition of proteolytic enzymes. 1. The characteristics of the enzymes.
AU Pahkala E.; Antila V.; Laukkanen M.
SO Meijeritieleellinen Aikakauskirja, 1984, 42 (1), 1-20 (10 ref.)
NTE B.
DT Journal

LA English
SL English; Finnish
AB The characteristics of various proteases derived from Aspergillus or Bacillus microorganisms, pancreas **trypsin** and papain from papaya, all used to accelerate cheese ripening, were studied. Proteolytic activity in casein and whey protein, endo-, amino-, carboxy- and dipeptidase activity, the effect of pH on caseinolytic activity, electrophoretic effects on casein, effect on growth of Streptococcus thermophilus, Lactobacillus helveticus and Lactobacillus lactis, and side activity causes by lipase and lactase were determined.
CT ACCELERATION; ACTIVITY; CHEESE; ENZYMES; ENZYMIC ACTIVITY; INCREASE; PAPAIN; PROPERTIES; PROTEASES; RATE; RIPENING; **TRYPSIN**
DED 30 May 1991

L7 ANSWER 55 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 175788 FROSTI
TI A **cheese**-like product, a process of its preparation and the use thereof.
IN Andersen O.
PA Pasilac-Danish Turnkey Dairies A/S
SO EUROPEAN PATENT APPLICATION
PI EP 261586 19860924
NTE 19860924
DT Patent
LA English
AB A sliceable cheese-like product with a vegetable base is described. Its dry matter content is at least 30 per cent and is made using the seeds of different plants including buckwheat, lupins, barley, maize, millet, sorghum, rice, oats, wheat and rye. The cheese-like product is made using ultrafiltration, optionally combined with diafiltration. The product is low in **trypsin** inhibitor and alpha-galactosides. This improves its nutritional value. Use of vegetable proteins means that the product has a higher content of soluble and/or dispersable or emulsifiable proteins. Additives such as flavours, colourings, pH-adjusting agents, essences, salts, fats, carbohydrates and bacterial cultures may be added. Further use of the product in snack foods and baked buns is described.
CT BARLEY; BUCKWHEAT; CEREALS; CHEESE SUBSTITUTES; CORN; FILTRATION; LUPIN SEED; MILLET; OATS; PATENTS; PRODUCTION; RICE; RYE; SEED; SORGHUM; SUBSTITUTES; ULTRAFILTRATION; VEGETABLES; WATER; WHEAT
DED 26 May 1988

L7 ANSWER 56 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 165865 FROSTI
TI Evaluation of factors involved in antibotulinal properties of pasteurized process **cheese** spreads.
AU Tanaka N.; Traisman E.; Plantinga P.; Finn L.; Flom W.; Meske L.; Guggisberg J.
SO Journal of Food Protection, 1986, 49 (7), 526-31 (20 ref.)
DT Journal
LA English
SL English
AB Pasteurised processed cheese spreads formulated with various levels of sodium chloride, disodium phosphate, moisture and pH were treated with spores of Clostridium botulinum types A and B and incubated at 30 C. Toxin production was determined at intervals up to 42 weeks using mouse bioassay, made more sensitive by treating samples with **trypsin**. Results were analysed statistically using response surface methodology, and mathematical models derived in order to predict the effect of changing the formulation of the spreads on their safety.
CT BACTERIA; BACTERIAL TOXINS; BIOASSAYS; BOTULINUM TOXIN; CHEESE; CHEESE PASTE; CLOSTRIDIUM; CLOSTRIDIUM BOTULINUM; DAIRY PRODUCTS; DETERMINATION; DIBASIC; FORMATION; LACTIC ACID; MATHEMATICAL MODELLING; MICE; MICROBIAL

TOXINS; MICROORGANISMS; MODELS; PASTES; PASTEURISED; PASTEURIZED DAIRY PRODUCTS; PH; RESPONSE SURFACE METHODOLOGY; SODIUM CHLORIDE; SODIUM PHOSPHATE; STATISTICAL ANALYSIS; TOXICITY; TOXINS; WATER; WATER ACTIVITY
DED 24 Nov 1986

L7 ANSWER 57 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 141299 FROSTI
TI **Cheese** food. (Fermentation of **cheese** with added soya protein).
IN Kudo S.; Et Al.
PA Asahimatsu Koridofu K.K.
SO United States Patent
PI US 4144358
DT Patent
LA English
CT CHEESE; DAIRY PRODUCTS; DEGRADATION; FERMENTATION; HEATING; INHIBITORS; PROTEINS; SOYA PRODUCTS; SOYA PROTEIN; SOYA PROTEINS; **TRYPSIN** INHIBITORS; VEGETABLE PROTEIN; VEGETABLE PROTEINS
DED 1 Oct 1980

L7 ANSWER 58 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 140287 FROSTI
TI Soybean-**cheese** product.
IN Peng A.C.
PA Ohio Agricultural Research And Development Centre.
SO United States Patent
PI US 4105803
DT Patent
LA English
CT CHEESE; DAIRY PRODUCTS; GLUCONO LACTONE; INHIBITORS; SOYA BEANS; SOYA PRODUCTS; TORYPSIN; **TRYPSIN** INHIBITORS; WHEAT; WHEY
DED 1 Oct 1980

L7 ANSWER 59 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 118893 FROSTI
TI Morphological ultrastructural and rheological characterisation of cheddar and mozzarella **cheese**.
AU Taranto M.V.; Wan P.J.; Chen S.L.; Rhee K.C.
SO Studies of food microstructure, Scanning Electron Microscopy Incorporated. SEM Inc., 163-8., 1981, 19 ref.
DT Book Article
LA English
SL English
CT ADHESIVENESS; CHEDDAR CHEESE; CHEESE; COHESIVENESS; CORRELATION; DAIRY PRODUCTS; DETERMINATION; ELASTICITY; ELECTRON MICROSCOPY; ETCHING; EVALUATION; EXAMINATION; FIRMNESS; FREEZE DRYING; MATRICES; MICROSCOPY; MOZZARELLA CHEESE; PHYSICAL; PROPERTIES; PROTEINS; RHEOLOGICAL PROPERTIES; SCANNING MICROSCOPY; SENSORY PROPERTIES; SOFTNESS; STICKINESS; STRUCTURE; TEXTURE; TRANSMISSION MICROSCOPY; **TRYPSIN**
DED 17 Jan 1985

L7 ANSWER 60 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 47441 FROSTI
TI A cottage **cheese** whey product as a precipitant for soy protein.
AU AGUILERA J.M.; KOSIKOWSKI F.V.
SO Journal of Dairy Science, 1978, 61 (11), 1548-56 (18 ref.).
DT Journal
CT ABSORPTION; ACIDS; ACTIVITY; APPLICATIONS; BINDING; BINDING CAPACITY; CHEESE; COMPOSITION; CONCENTRATES; COTTAGE CHEESE; EMULSIFICATION; EMULSIFYING CAPACITY; ENZYMES; ENZYMIC ACTIVITY; EVALUATION; EXTRACTION; FILTRATION; FOAMING; FOAMING CAPACITY; GELATION; INHIBITORS; ISOLATES; NITROGEN SOLUBILITY INDEX; NITROGEN VOLUBILITY INDEX; PH; PHYSICAL

PROPERTIES; PRECIPITATION; PRODUCTION; PROPERTIES; PROTEIN ISOLATES; PROTEINS; SORPTION CAPACITY; SOYA PRODUCTS; SOYA PROTEIN; SOYA PROTEINS; **TRYPSIN** INHIBITORS; VEGETABLE PROTEIN; VEGETABLE PROTEINS; WATER; WATER BINDING; WATER BINDING CAPACITY; WATER SORPTION; WATER SORPTION CAPACITY; WETTABILITY; WHEY
DED 1 Oct 1980

L7 ANSWER 61 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 21426 FROSTI
TI Manufacturing of a **cheese**-like product from soya bean milk. Part III. Manufacturing from full fat soya bean milk.
AU Matsuoka H.; Fuke Y.
SO Nippon Shokuhin Kogyo Gakkaishi, 1975, 22 (9), 436-42 (4 ref.)
DT Journal
LA Japanese
SL English
CT ACTIVITY; CHEESE SUBSTITUTES; CURDS; DAIRY SUBSTITUTES; EVALUATION; INHIBITION; OILSEEDS; PRODUCTION; RECONSTITUTED; RIPENING; SOYA CURD; SOYA MILK; SOYA PRODUCTS; SUBSTITUTE; SUBSTITUTES; **TRYPSIN**; **TRYPSIN** INHIBITORS; VEGETABLE MILKS
DED 1 Oct 1980

L7 ANSWER 62 OF 62 FROSTI COPYRIGHT 2002 LFRA
AN 12337 FROSTI
TI Influence of copper ions on proteolytic enzymes of **cheese**.
AU Kirchmeier O.; Laksch R.; Kiermeier F.
SO Zeitschrift fur Lebensmittel-Untersuchung und -Forschung, 1974, 156 (4), 224-30 (6 ref.)
DT Journal
LA German
SL English
CT CARBOXYPEPTIDASES; CHEESE; CHYMOTRYPSIN; COPPER; DAIRY PRODUCTS; ENZYMES; INHIBITION; PEPSIN; PROTEASES; PROTEOLYTIC ACTIVITY; **TRYPSIN**; **TRYPSIN** INHIBITORS
DED 1 Oct 1980

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(FILE 'HOME' ENTERED AT 11:12:19 ON 22 MAR 2002)

FILE 'FSTA, FROSTI' ENTERED AT 11:12:30 ON 22 MAR 2002
L1 45623 S CHEESE#
L2 4649 S TRYPSIN
L3 770 S TRANSGLUTAMINASE#
L4 0 S L1 AND L2 AND L3
L5 123 S L1 AND L2
L6 23751 S L1/TI
L7 62 S L6 AND L2

=> s l3 and l6
L8 21 L3 AND L6

=> d 1-21 all

L8 ANSWER 1 OF 21 FSTA COPYRIGHT 2002 IFIS
AN 2002:P0501 FSTA
TI **Cheese** whey protein having improved texture process for producing the same and use thereof.
IN Soeda, T.
PA Soeda, Kawasaki-shi, Japan
SO United States Patent Application Publication, (2001)

PI US 2001053398 A1
PRAI JP 1998-176988 19980624
DT Patent
LA English
AB A process for producing a modified cheese whey protein is described. Initially, the pH of an aqueous whey protein solution is made alkaline and/or the solution is heated. Then, the whey protein is treated with a **transglutaminase** (protein-glutamine .gamma.-glutamyl transferase).
CC P (Milk and Dairy Products)
CT PATENTS; PROTEINS MILK; WHEY; MODIFICATION; WHEY PROTEINS

L8 ANSWER 2 OF 21 FSTA COPYRIGHT 2002 IFIS
AN 2001(12):P1840 FSTA
TI Incorporation of whey into process **cheese**.
IN Xiao-Qing Han; Spradlin, J. E.
PA Kraft Foods, Northfield, IL, USA
SO United States Patent, (2001)
PI US 6270814 B1
PRAI US @@@@-325220 19990603
DT Patent
LA English
AB A processed cheese product is described, made with cheese and dairy liquid containing casein, whey protein and lactose. A portion of the casein and/or whey protein in the dairy liquid is crosslinked via .gamma.-carboxyl-.epsilon.-amino linkages before being combined with the cheese. The lactose in the processed cheese product remains dissolved in the aqueous phase upon storage. The process used to prepare the cheese includes a step in which the dairy liquid is exposed to **transglutaminase** under conditions which allow crosslinking of casein and/or whey protein to take place. Also described is the process for manufacture of the cheese product, which includes replacement of some of the cheese proteins with the crosslinked protein conjugates in the dairy liquid. Crystallization of lactose in the processed cheese is inhibited, resulting in higher lactose levels than those normally introduced into cheese products.
CC P (Milk and Dairy Products)
CT CASEIN; CHEESE VARIETIES; LACTOSE; PATENTS; PROTEINS MILK; WHEY; PROCESSED CHEESE; WHEY PROTEINS

L8 ANSWER 3 OF 21 FSTA COPYRIGHT 2002 IFIS
AN 2001(08):P1370 FSTA
TI Process for incorporating whey proteins into **cheese** using **transglutaminase**.
IN Xiao-Qing Han; Spradlin, J. E.
PA Kraft Foods Inc.; Kraft Foods, Northfield, IL, USA
SO United States Patent, (2001)
PI US 6224914 B1
PRAI US @@@@-325217 19990603
DT Patent
LA English
AB A cheese curd is described which contains a substantial proportion of whey protein products and curded proteins originating from a dairy liquid containing casein. Also described is a process for making the cheese curd, which involves contact between a dairy liquid fortified with whey protein and a **transglutaminase** (protein-glutamine .gamma.-glutamyltransferase), providing a modifed dairy liquid containing whey protein products. This liquid is then blended with a second dairy liquid and renneted to provide a curd in which a high proportion of whey protein products is retained. The curd can then be used to prepare cheese products, including soft, semi-soft and hard cheeses which contain substantial amounts of whey protein products and curded proteins originating from dairy liquids.

CC P (Milk and Dairy Products)
CT CHEESEMAKING; CURD; PATENTS; PROTEINS MILK; TRANSFERASES; WHEY; CHEESE CURD; PROTEIN-GLUTAMINE Nd -GLUTAMYLTRANSFERASES; WHEY PROTEINS

L8 ANSWER 4 OF 21 FSTA COPYRIGHT 2002 IFIS
AN 2000(05):G0212 FSTA
TI **Cheese** whey protein having improved texture, process for producing the same and use thereof.
IN Soeda, T.
PA Ajinomoto Co. Inc.; Ajinomoto, Tokyo, Japan
SO European Patent Application, (1999)
PI EP 966887 A1
PRAI JP 1998-176988 19980624
DT Patent
LA English
AB A process is described for modification of cheese whey protein by partially denaturing the protein and treating it with **transglutaminase**. The protein is subjected to pH adjustment and preheating before **transglutaminase** treatment. When the treated cheese whey protein is subsequently heated at .gtoreq.100.degree.C, insolubilization of the protein by aggregation does not occur. A gel made from the treated whey protein or foods made with this protein can have excellent texture and maintain good emulsifiability, foamability and water holding capacity.
CC G (Catering, Speciality and Multicomponent Foods)
CT FUNCTIONAL PROPERTIES; PATENTS; PROTEINS MILK; TEXTURE; TRANSFERASES; WHEY; MODIFICATION; PROTEIN-GLUTAMINE Nd -GLUTAMYLTRANSFERASES; WHEY PROTEINS

L8 ANSWER 5 OF 21 FSTA COPYRIGHT 2002 IFIS
AN 1997(11):P0182 FSTA
TI A process for making **cheese**.
IN Budtz, P.
PA Novo Nordisk A/S; Novo Nordisk, Novo Alle, DK-2880 Bagsvaerd, Denmark
SO PCT International Patent Application, (1997)
PI WO 9701961 A1
PRAI DK 1995-764 19950630
DT Patent
LA English
AB A process for manufacturing cheese and the products obtained from this process are described. **Transglutaminase** is added to cheesemaking milk and incubated with a rennet so as to cause clotting. Whey is separated from the coagulate and the coagulate is processed into cheese. The use of **transglutaminase** for maintaining proteins in cheese during a conventional cheesemaking process is also described. [From En summ.]
CC P (Milk and Dairy Products)
CT CHEESEMAKING; ENZYMES; PATENTS; PROCESSING; TRANSFERASES; **TRANSGLUTAMINASES**

L8 ANSWER 6 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 563782 FROSTI
TI Incorporation of whey into process **cheese**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO United States Patent
PI US 6270814 B 20010807
AI 19990603
NTE 20010807
DT Patent
LA English
SL English

AB A processed cheese has increased content of whey proteins and lactose. The whey and milk proteins are crosslinked through the action of **transglutaminase** prior to blending with cheese.
SH DAIRY PRODUCTS
CT CHEESE; CROSS LINKING; DAIRY PRODUCTS; ENZYMES; MILK PROTEIN; PATENT; PROCESSED CHEESE; PROTEIN; **TRANSGLUTAMINASE**; US PATENT; WHEY PROTEIN
DED 25 Sep 2001

L8 ANSWER 7 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 560530 FROSTI
TI Process for making **cheese**.
IN Budtz P.
PA Novozymes A/S Patents
SO United States Patent
PI US 6258390 B 20010710
WO 9701961 19970123
AI 19971215
PRAI Denmark 19950630
NTE 20010710
DT Patent
LA English
SL English
AB The patent describes a method for making cheese from cheesemilk that has been pretreated with an enzyme, which is able to maintain proteins in the cheese material during the cheese-making process, so that increased yields of cheese are obtained. The enzyme used is **transglutaminase**, which is capable of increasing the amount of protein left in the coagulated cheese material after incubation with rennet, and after the separation of whey from coagulate. The method involves adding **transglutaminase** to cheesemilk and incubating for a suitable period; incubating with rennet to cause clotting; separating the whey from the coagulate; and processing the coagulate into cheese.
SH DAIRY PRODUCTS
CT CHEESE; DAIRY PRODUCTS; ENZYMES; INCREASE; PATENT; PRODUCTION; PROTEIN; QUANTITY; **TRANSGLUTAMINASE**; US PATENT; YIELD
DED 10 Aug 2001

L8 ANSWER 8 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 559885 FROSTI
TI **Cheese** curd made using **transglutaminase** and a non-rennet protease.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO United States Patent
PI US 6242036 B 20010605
AI 20000605
NTE 20010605
DT Patent
LA English
SL English
AB Cheese curd made using **transglutaminase** and a non-rennet protease is described. A dairy liquid containing casein and whey protein is treated with **transglutaminase** and a non-rennet protease. The cheese curd obtained contains most of the whey protein products. The process may also be used to prepare cheese that contains whey protein products.
SH DAIRY PRODUCTS
CT CASEIN; CHEESE; CHEESE CURD; DAIRY PRODUCTS; ENZYMES; MILK PROTEINS; NON RENNET PROTEINASES; PATENT; PROTEINASES; PROTEINS; **TRANSGLUTAMINASE**; US PATENT; WHEY PROTEIN PRODUCTS

DED 7 Aug 2001

L8 ANSWER 9 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 555512 FROSTI
TI Process for incorporating whey proteins into **cheese** using **transglutaminase**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO United States Patent
PI US 6224914 B
AI 19990603
DT Patent
LA English
SL English
AB A cheese curd contains a substantial amount of whey protein products and curded proteins originating from a dairy liquid comprising casein. The whey protein is modified using **transglutaminase**, which is then blended with a second dairy liquid and renneted to produce the curd. The curd can be used to prepare cheese products.
SH DAIRY PRODUCTS
CT CASEIN; CHEESE PRODUCTS; CURD; DAIRY PRODUCTS; ENZYMES; MILK PROTEIN; MILK PROTEINS; PATENT; PROTEIN; PROTEINS; **TRANSGLUTAMINASE**; US PATENT; WHEY PROTEINS
DED 14 Jun 2001

L8 ANSWER 10 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 543770 FROSTI
TI Incorporation of whey into process **cheese**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO European Patent Application
PI EP 1057412 A2 20001206
AI 20000602
PRAI United States 19990603
NTE 20001206
DT Patent
LA English
SL English
AB A processed cheese has increased content of whey proteins and lactose. The whey and milk proteins are crosslinked through the action of **transglutaminase** prior to blending with cheese.
SH DAIRY PRODUCTS
CT CHEESE; CROSS LINKING; DAIRY PRODUCTS; ENZYMES; EUROPEAN PATENT; MILK PROTEIN; PATENT; PROCESSED CHEESE; PROTEIN; **TRANSGLUTAMINASE**; WHEY PROTEIN
DED 2 Feb 2001

L8 ANSWER 11 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 543769 FROSTI
TI Process for incorporating whey proteins into **cheese** using **transglutaminase**.
IN Han X.-Q.; Spradlin J.E.
PA Kraft Foods Inc.
SO European Patent Application
PI EP 1057411 A2 20001206
AI 20000602
PRAI United States 19990603
NTE 20001206
DT Patent
LA English
SL English
AB A cheese curd contains a substantial amount of whey protein products and

curded proteins originating from a dairy liquid comprising casein. The whey protein is modified using **transglutaminase**, which is then blended with a second dairy liquid and renneted to produce the curd. The curd can be used to prepare cheese products.

SH DAIRY PRODUCTS

CT CASEIN; CHEESE PRODUCTS; CURD; DAIRY PRODUCTS; ENZYMES; EUROPEAN PATENT; MILK PROTEIN; PATENT; PROTEINS; **TRANSGLUTAMINASE**; WHEY PROTEINS

DED 2 Feb 2001

L8 ANSWER 12 OF 21 FROSTI COPYRIGHT 2002 LFRA

AN 543014 FROSTI

TI Process for making **cheese** using **transglutaminase** and a non-rennet protease.

IN Anon.

PA Kraft Foods Inc.

SO European Patent Application

PI EP 1048218 A2

AI 20000419

PRAI United States 19990427

DT Patent

LA English

SL English

AB A process for making cheese using **transglutaminase** and a non-rennet protease is described. Dairy liquids containing casein and whey protein may be treated with **transglutaminase** and a non-rennet protease to give a cheese curd containing a substantial proportion of whey protein products. Cheeses, soft, semi-soft or hard, may also be prepared using the process of the invention.

SH DAIRY PRODUCTS

CT CHEESE; CHEESEMAKING; DAIRY PRODUCTS; ENZYMES; EUROPEAN PATENT; NON RENNET PROTEASES; PATENT; PROCESSING; PROTEINASES; **TRANSGLUTAMINASE**; WHEY PROTEIN PRODUCTS

DED 25 Jan 2001

L8 ANSWER 13 OF 21 FROSTI COPYRIGHT 2002 LFRA

AN 539675 FROSTI

TI **Cheese** whey protein having improved palatability, its production and utilisation thereof.

IN Soeda T.

PA Ajinomoto Co. Inc.

SO Japanese Patent Application

PI JP 2000004786 A 20000111

AI 19980624

NTE 20000111

DT Patent

LA Japanese

SL English

AB This cheese whey protein has improved physical properties (emulsifying, foaming, moisture retention, palatability). It has a smooth mouthfeel. A solution of whey is subjected to a **transglutaminase** treatment under specified conditions.

SH DAIRY PRODUCTS

CT DAIRY PRODUCTS; FUNCTIONAL PROPERTIES; JAPANESE PATENT; MILK PROTEIN; PATENT; PROTEIN; WHEY PROTEIN

DED 7 Dec 2000

L8 ANSWER 14 OF 21 FROSTI COPYRIGHT 2002 LFRA

AN 533416 FROSTI

TI Process for making **cheese** using **transglutaminase** and a non-rennet protease.

IN Han X.-Q.; Spradlin J.E.

PA Kraft Foods Inc.

SO United States Patent
PI US 6093424 B 20000725
AI 19990427
NTE 20000725
DT Patent
LA English
SL English
AB A cheese curd contains protein products originating from a dairy liquid containing casein and whey protein. The liquid is subjected to action from a **transglutaminase** and a non-rennet protease, resulting in a high proportion of whey protein products being retained in the cheese curd.
SH DAIRY PRODUCTS
CT CHEESE; CHEESEMAKING; CURD; DAIRY PRODUCTS; ENZYMES; MILK PROTEINS; PATENT; PROTEINASES; PROTEINS; **TRANSGLUTAMINASES**; US PATENT
DED 3 Oct 2000

L8 ANSWER 15 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 519239 FROSTI
TI **Cheese** whey protein having improved texture, process for producing the same and use thereof.
IN Soeda T.
PA Aijinomoto Co. Inc.
SO European Patent Application
PI EP 966887 A1
AI 19990623
PRAI Japan 19980624
DT Patent
LA English
SL English
AB A process for modifying cheese whey protein to improve its texture is disclosed, which comprises partially denaturing the protein and treating it with a **transglutaminase**. The whey protein is preferably subjected to alkali treatment and/or preheat treatment prior to the reaction with the **transglutaminase**. The final product is preferably in the form of a powder to increase its storage stability and to provide a convenient food ingredient.
SH DAIRY PRODUCTS
CT DAIRY PRODUCTS; DEGRADATION; DENATURATION; ENZYMES; EUROPEAN PATENT; IMPROVEMENT; INGREDIENTS; MILK PROTEIN; MODIFICATION; PATENT; PROTEIN; SENSORY PROPERTIES; TEXTURE; **TRANSGLUTAMINASE**; WHEY PROTEIN
DED 2 May 2000

L8 ANSWER 16 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 468823 FROSTI
TI A process for making **cheese**.
IN Budtz P.
PA Novo Nordisk A/S
SO European Patent Application
PI EP 835061 A1
WO 9701961 19970123
AI 19960625
PRAI Denmark 19950630
DT Patent
LA English
SL English
AB The patent describes a method for making cheese from cheesemilk that has been pretreated with an enzyme, which is able to maintain proteins in the cheese material during the cheese-making process, so that increased yields of cheese are obtained. The enzyme used is **transglutaminase**, which is capable of increasing the amount of protein left in the coagulated cheese material after incubation with

rennet, and after the separation of whey from coagulate. The method involves adding **transglutaminase** to cheesemilk and incubating for a suitable period; incubating with rennet to cause clotting; separating the whey from the coagulate; and processing the coagulate into cheese.
SH DAIRY PRODUCTS
CT CHEESE; ENZYMES; EUROPEAN PATENT; INCREASE; PRODUCTION; PROTEIN; QUANTITY; **TRANSGLUTAMINASE**; YIELDS
DED 9 Jun 1998

L8 ANSWER 17 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 458219 FROSTI
TI Process for producing **cheese** using **transglutaminase**.
IN Kuraishi C.; Sakamoto J.; Soeda T.
PA Ajinomoto Co. Inc.
SO United States Patent
PI US 5681598 B 19971028
AI 19951026
PRAI Japan 19941026
NTE 19971028
DT Patent
LA English
SL English
AB A process for producing natural cheese is disclosed, which incorporates a **transglutaminase** reaction. The process produces a greater quantity of cheese curd then is produced by conventional methods. The cheese produced is claimed to have an excellent flavour, texture and appearance. The **transglutaminase** can be added before, after or at the same time as the milk-clotting enzyme is added to the milk or milk protein.
SH DAIRY PRODUCTS
CT CHEESE; CHEESE CURD; PROCESSING; **TRANSGLUTAMINASE**; US PATENT
DED 19 Dec 1997

L8 ANSWER 18 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 426458 FROSTI
TI A process for making **cheese**.
IN Budtz P.
PA Novo Nordisk A/S
SO PCT Patent Application
PI WO 9701961 A1
AI 19960625
PRAI Denmark 19950630
DT Patent
LA English
SL English
AB The patent describes a method for making cheese from cheesemilk that has been pre-treated with an enzyme, which is able to maintain proteins in the cheese material during the cheese-making process, so that increased yields of cheese are obtained. The enzyme used is **transglutaminase**, which is capable of increasing the amount of protein left in the coagulated cheese material after incubation with rennet, and after the separation of whey from coagulate. The method involves adding **transglutaminase** to cheesemilk and incubating for a suitable period; incubating with rennet to cause clotting; separating the whey from the coagulate; and processing the coagulate into cheese.
SH DAIRY PRODUCTS
CT CHEESE; INCREASE; PCT PATENT; PRODUCTION; **TRANSGLUTAMINASE**; YIELDS
DED 1 Apr 1997

L8 ANSWER 19 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 426035 FROSTI
TI Production of **cheese** using **transglutaminase**.
IN Kuraishi T.; Sakamoto J.; Soeda T.
PA Ajinomoto Co. Inc.
SO Japanese Patent Application
PI JP 08173032 A 19960709
AI 19950601
NTE 19960709
DT Patent
LA Japanese
SL English
AB A solution containing milk or milk protein is treated with a specified concentration of **transglutaminase**. The enzyme is then deactivated by heat treatment at 72-75 C for 15 seconds to 2 minutes. The resulting substance is then treated with a milk-coagulation enzyme to produce cheese with the same texture and flavour as conventional cheese. The **transglutaminase** treatment increases the weight of curd produced without damage to the texture of the finished cheese.
SH DAIRY PRODUCTS
CT ADDITIVES; CHEESE; CHEESE CURD; CURDS; HEATING; JAPANESE PATENT; MILK; MILK CURD; MILK PROTEIN; MILK PROTEINS; PROCESSING; PRODUCTION; PROTEINS; TEXTURE; **TRANSGLUTAMINASE**
DED 27 Feb 1997

L8 ANSWER 20 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 418131 FROSTI
TI A cross-linking approach for studying mutual spatial relationships of protein components in **cheese**.
AU Righi A.; Turin L.; Bonomi F.
SO Milchwissenschaft, 1996, 51 (8), 442-446 (20 ref.)
DT Journal
LA English
SL English; German
AB Cross-linkages between amino acid side chains of proteins may be formed by the enzyme **transglutaminase** or by other molecules containing two reactive groups. This paper reports the use of glutaraldehyde for cross-linking casein micelle protein components in milk and in commercial cheese samples. In raw milk, alpha(s)-casein and beta-casein had similar reactivities with glutaraldehyde, but whey proteins were unreactive. In the cheeses studied (Mozzarella, Caciotta, Taleggio, and processed cheese), beta-casein and para-kappa-casein were sensitive indicators of changes in micellar structure during cheese ripening.
SH DAIRY PRODUCTS
CT CASEIN; CASEIN MICELLES; CHEESE; CROSS LINKING; GLUTARALDEHYDE; MICELLES; MILK; MILK PROTEIN; MILK PROTEINS; PROTEINS; RIPENING; STRUCTURE; TYPE
DED 19 Sep 1996

L8 ANSWER 21 OF 21 FROSTI COPYRIGHT 2002 LFRA
AN 410135 FROSTI
TI Process for producing **cheese** using **transglutaminase**.
IN Kuraishi C.; Sakamoto J.; Soeda T.
PA Ajinomoto Co. Inc.
SO European Patent Application
PI EP 711504 A1
DS DE; FR; GB; IT
AI 19951026
PRAI Japan 19941026; 19950601
DT Patent
LA English
SL English
AB A method is disclosed for production of natural cheese by which the

enzyme **transglutaminase** (TG) is added to a solution containing milk or milk protein. The mixture is then heat-treated, and a milk-clotting enzyme is added. It is claimed that the process can provide large amounts of cheese curd compared with conventional methods. The cheese so produced is said to have a good flavour, taste and appearance.

SH DAIRY PRODUCTS
CT CHEESE; ENZYMES; EUROPEAN PATENT; PRODUCTION; **TRANSGLUTAMINASE**
DED 13 Jun 1996

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COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	133.98	134.13

FILE 'USPATFULL' ENTERED AT 11:18:49 ON 22 MAR 2002
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FILE 'USPAT2' ENTERED AT 11:18:49 ON 22 MAR 2002
CA INDEXING COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

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=> d his

(FILE 'HOME' ENTERED AT 11:12:19 ON 22 MAR 2002)

FILE 'FSTA, FROSTI' ENTERED AT 11:12:30 ON 22 MAR 2002
L1 45623 S CHEESE#
L2 4649 S TRYPSIN
L3 770 S TRANSGLUTAMINASE#
L4 0 S L1 AND L2 AND L3
L5 123 S L1 AND L2
L6 23751 S L1/TI
L7 62 S L6 AND L2
L8 21 S L3 AND L6

FILE 'USPATFULL, USPAT2' ENTERED AT 11:18:49 ON 22 MAR 2002

=> s l4
L9 9 L4

=> d 1-9

L9 ANSWER 1 OF 9 USPATFULL
AN 2001:36957 USPATFULL
TI Polypeptide with reduced respiratory allergenicity
IN Olsen, Arne Agerlin, Virum, Denmark
Hansen, Lars Bo, Herlev, Denmark
Beck, Thomas Christian, Birker.o slashed.d, Denmark
PA Novo Nordisk A/S, Bagsvaerd, Denmark (non-U.S. corporation)
PI US 6201110 B1 20010313
AI US 2000-610751 20000706 (9)
RLI Continuation of Ser. No. US 1999-405311, filed on 20 Sep 1999, now patented, Pat. No. US 6114509 Continuation of Ser. No. US 1998-150891, filed on 10 Sep 1998, now patented, Pat. No. US 5981718 Continuation of Ser. No. US 1997-836293, filed on 12 May 1997, now patented, Pat. No. US 5856451 Continuation of Ser. No. WO 1994-DK9500497, filed on 7 Dec 1994
PRAI DK 1994-1395 19941207

DK 1994-1396 19941207
DK 1994-1397 19941207
DK 1994-1398 19941207
DK 1994-1399 19941207
DK 1994-1400 19941207
DK 1994-1401 19941207
DT Utility
FS Granted
LN.CNT 2239
INCL INCLM: 530/402.000
INCLS: 530/350.000; 530/403.000; 435/189.000; 435/190.000
NCL NCLM: 530/402.000
NCLS: 435/189.000; 435/190.000; 530/350.000; 530/403.000
IC [7]
ICM: C07K001-10
EXF 530/402; 530/350; 530/403; 435/189; 435/190
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 2 OF 9 USPATFULL
AN 2000:117890 USPATFULL
TI Polypeptide with reduced allergenicity
IN Olsen, Arne Agerlin, Virum, Denmark
Hansen, Lars Bo, Herlev, Denmark
Beck, Thomas Christian, Birker.o slashed.d, Denmark
PA Novo Nordisk A/S, Bagsvard, Denmark (non-U.S. corporation)
PI US 6114509 20000905
AI US 1999-405311 19990920 (9)
RLI Continuation of Ser. No. US 1998-150891, filed on 10 Sep 1998, now patented, Pat. No. US 5981718 which is a continuation of Ser. No. US 1997-836293, filed on 12 May 1997, now patented, Pat. No. US 5856451 which is a continuation of Ser. No. WO 1995-DK497, filed on 7 Dec 1995
PRAI DK 1994-1395 19941207
DK 1994-1396 19941207
DK 1994-1397 19941207
DK 1994-1398 19941207
DK 1994-1399 19941207
DK 1994-1400 19941207
DK 1994-1401 19941207
DT Utility
FS Granted
LN.CNT 2255
INCL INCLM: 530/402.000
INCLS: 530/350.000; 530/403.000; 435/189.000; 435/190.000
NCL NCLM: 530/402.000
NCLS: 435/189.000; 435/190.000; 530/350.000; 530/403.000
IC [7]
ICM: C07K001-10
EXF 530/402; 530/350; 530/403; 435/189; 435/193
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 3 OF 9 USPATFULL
AN 2000:109335 USPATFULL
TI Conjugation of polypeptides
IN Bisgard-Frantzen, Henrik, Bagsvaerd, Denmark
Olsen, Arne Agerlin, Virum, Denmark
Prento, Annette, Ballerup, Denmark
PA Novo Nordisk A/S, Bagsvaerd, Denmark (non-U.S. corporation)
PI US 6106828 20000822
AI US 1998-123787 19980728 (9)
RLI Continuation of Ser. No. WO 1997-DK51, filed on 7 Feb 1997
PRAI DK 1996-154 19960215
DT Utility

FS Granted
LN.CNT 1823
INCL INCLM: 424/094.100
INCLS: 424/094.200; 435/174.000; 435/175.000; 435/176.000; 435/177.000; 435/178.000; 435/179.000; 435/180.000; 435/181.000; 514/002.000; 514/008.000; 514/012.000; 530/322.000; 530/323.000
NCL NCLM: 424/094.100
NCLS: 424/094.200; 435/174.000; 435/175.000; 435/176.000; 435/177.000; 435/178.000; 435/179.000; 435/180.000; 435/181.000; 514/002.000; 514/008.000; 514/012.000; 530/322.000; 530/323.000
IC [7]
ICM: A61K038-43
ICS: A61K038-00; C12N011-00; C12N011-06; A01N037-18
EXF 435/174; 435/175; 435/176; 435/177; 435/178; 435/179; 435/180; 435/181; 530/350; 530/322; 530/323; 424/94.1; 424/94.2; 514/2; 514/8; 514/12
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 4 OF 9 USPATFULL
AN 2000:24495 USPATFULL
TI Stabilized **transglutaminase** and enzyme preparation containing the same
IN Soeda, Takahiko, Kawasaki, Japan
Hondo, Keiko, Kawasaki, Japan
Kuhara, Chiho, Kawasaki, Japan
PA Ajinomoto Co., Inc., Tokyo, Japan (non-U.S. corporation)
PI US 6030821 20000229
WO 9611264 19960418
AI US 1996-652552 19960725 (8)
WO 1995-JP2076 19951011
19960725 PCT 371 date
19960725 PCT 102(e) date
PRAI JP 1994-245211 19941011
DT Utility
FS Granted
LN.CNT 568
INCL INCLM: 435/188.000
INCLS: 435/193.000; 426/020.000
NCL NCLM: 435/188.000
NCLS: 426/020.000; 435/193.000
IC [7]
ICM: C12N009-00
EXF 435/193; 426/188; 426/20
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 5 OF 9 USPATFULL
AN 1999:142125 USPATFULL
TI Polypeptide with reduced allergenicity
IN Olsen, Arne Agerlin, Virum, Denmark
Hansen, Lars Bo, Herlev, Denmark
Beck, Thomas Christian, Birker.o slashed.d, Denmark
PA Novo Nordisk A/S, Bagsvaerd, Denmark (non-U.S. corporation)
PI US 5981718 19991109
AI US 1998-150891 19980910 (9)
RLI Continuation of Ser. No. US 1997-836293, filed on 12 May 1997, now patented, Pat. No. US 5856451 which is a continuation of Ser. No. WO 1995-DK497, filed on 7 Dec 1995
PRAI DK 1994-1395 19941207
DK 1994-1396 19941207
DK 1994-1397 19941207
DK 1994-1398 19941207
DK 1994-1399 19941207
DK 1994-1400 19941207

DK 1994-1401 19941207
DT Utility
FS Granted
LN.CNT 2257
INCL INCLM: 530/402.000
INCLS: 530/350.000; 530/403.000; 435/189.000; 435/193.000
NCL NCLM: 530/402.000
NCLS: 435/189.000; 435/193.000; 530/350.000; 530/403.000
IC [6]
ICM: C07K001-10
EXF 530/402; 530/350; 530/403; 435/189; 435/193
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 6 OF 9 USPATFULL
AN 1999:1779 USPATFULL
TI Method for reducing respiratory allergenicity
IN Olsen, Arne Agerlin, Virum, Denmark
Hansen, Lars Bo, Herlev, Denmark
Beck, Thomas Christian, Birker.o slashed.d, Denmark
PA Novo Nordisk A/S, Bagsvaerd, Denmark (non-U.S. corporation)
PI US 5856451 19990105
WO 9617929 19960613
AI US 1997-836293 19970512 (8)
WO 1995-DK497 19951207
19970512 PCT 371 date
19970512 PCT 102(e) date
PRAI DK 1994-1395 19941207
DK 1994-1396 19941207
DK 1994-1397 19941207
DK 1994-1398 19941207
DK 1994-1399 19941207
DK 1994-1400 19941207
DK 1994-1401 19941207
DT Utility
FS Granted
LN.CNT 2323
INCL INCLM: 530/402.000
INCLS: 530/350.000; 530/403.000; 435/189.000; 435/193.000
NCL NCLM: 530/402.000
NCLS: 435/189.000; 435/193.000; 530/350.000; 530/403.000
IC [6]
ICM: C07K001-10
EXF 530/350; 530/402; 530/403; 435/189; 435/193
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L9 ANSWER 7 OF 9 USPATFULL
AN 1998:157385 USPATFULL
TI Autobiotics and their use in eliminating nonself cells
IN Egyud, Laszlo G., Woods Hole, MA, United States
PA Cell Research Corporation, Cambridge, MA, United States (U.S. corporation)
PI US 5849783 19981215
AI US 1995-536618 19950928 (8)
RLI Continuation of Ser. No. US 1994-344161, filed on 23 Nov 1994, now abandoned which is a continuation of Ser. No. US 1993-24685, filed on 1 Mar 1993, now abandoned which is a continuation-in-part of Ser. No. US 1991-703380, filed on 21 May 1991, now abandoned which is a division of Ser. No. US 1990-547983, filed on 3 Jul 1990, now patented, Pat. No. US 5147652
DT Utility
FS Granted
LN.CNT 2397